GA ICTSIG

KS3–P16
Presented by the GA ICTSIG
Room 4.204

'7 GIS Ideas'

for everyone to use in the geography classroom

Geographical Association
ICT Special Interest Group

ECT Lecture 2

ECT Lecture 2

Seven GIS ideas for everyone to use in the geography classroom

GIS is an important tool for teaching geography so the aim of this session is to present seven ideas that everyone can use in their lessons. Each idea will be presented separately by different members of the GA's ICT Special Interest Group to inspire you to integrate them into your own classroom practice.

Sophie Wilson, Teacher Educator, St Mary's University, Twickenham, with Heidi Quenby, Jo Meredith, Agnes Simic, Kate Russell, Brendan Conway and Alistair Hamill

KS3–P16

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FRI 5th April 2024 #GACONF24

Geographical Association

How can we respond to the issues raised in ‘Bearings’?
…and help to counter the ‘silofication’ of GIS?

- **Key issues include ‘silofication’ of knowledge (e.g. procedural knowledge)**

> ‘The weakest form of geographical knowledge in almost all schools is procedural knowledge. Leaders rarely consider how to plan a curriculum for procedural knowledge in the same way as they do for substantive knowledge...Pupils are also given few opportunities to develop their skills in using this procedural knowledge, as they do not return to it and practise it until fluent.’
>
> 'Getting our bearings: geography subject report' Ofsted 2023

We’re not alone…

> *‘procedural [knowledge] is mostly dismissed under the umbrella of 'scientific investigations’.’*
> Lee Bates (Biology teacher)

> *‘By overlooking and reinforcing the bounded perspective of expertise, the conditions that manifest organizational silofication occur.’* Silberman et al 2022 (Boston University)

- **Similar scenario in geography: Topics classified as 'skills' (see NC and specs)**
- **Assessment and teaching may conspire in a self-perpetuating spiral of ‘silofication’**

How can we respond to the issues raised in ‘Bearings’?
…and help to counter the ‘silofication’ of GIS?

Response to Bearings by @gasigict:

How mapping and the use of GIS enrich geographical thought and action (The GA Blog 24th January 2024)

‘A general impediment to curriculum progression raised by the ‘Getting Our Bearings’ report can be a tendency to teach knowledge and skills in a detached way.

Even where GIS is being taught, it can be afflicted by this issue, sometimes referred to as ‘silos’ (Enser 2021).

Consequently, there have been increasing calls from classroom teachers to find ways to make GIS ‘part of the furniture’ (Conway and Freeman 2023).’

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- Exploring a locality with digital maps
- Quick wins with 3D Scenes
- Using Sentinel Hub to observe eruptions in Iceland
- Queering the map
- Changing borders
- Realtime GIS
- Air Pollution and the school's travel plan
- Breathing new life into old maps

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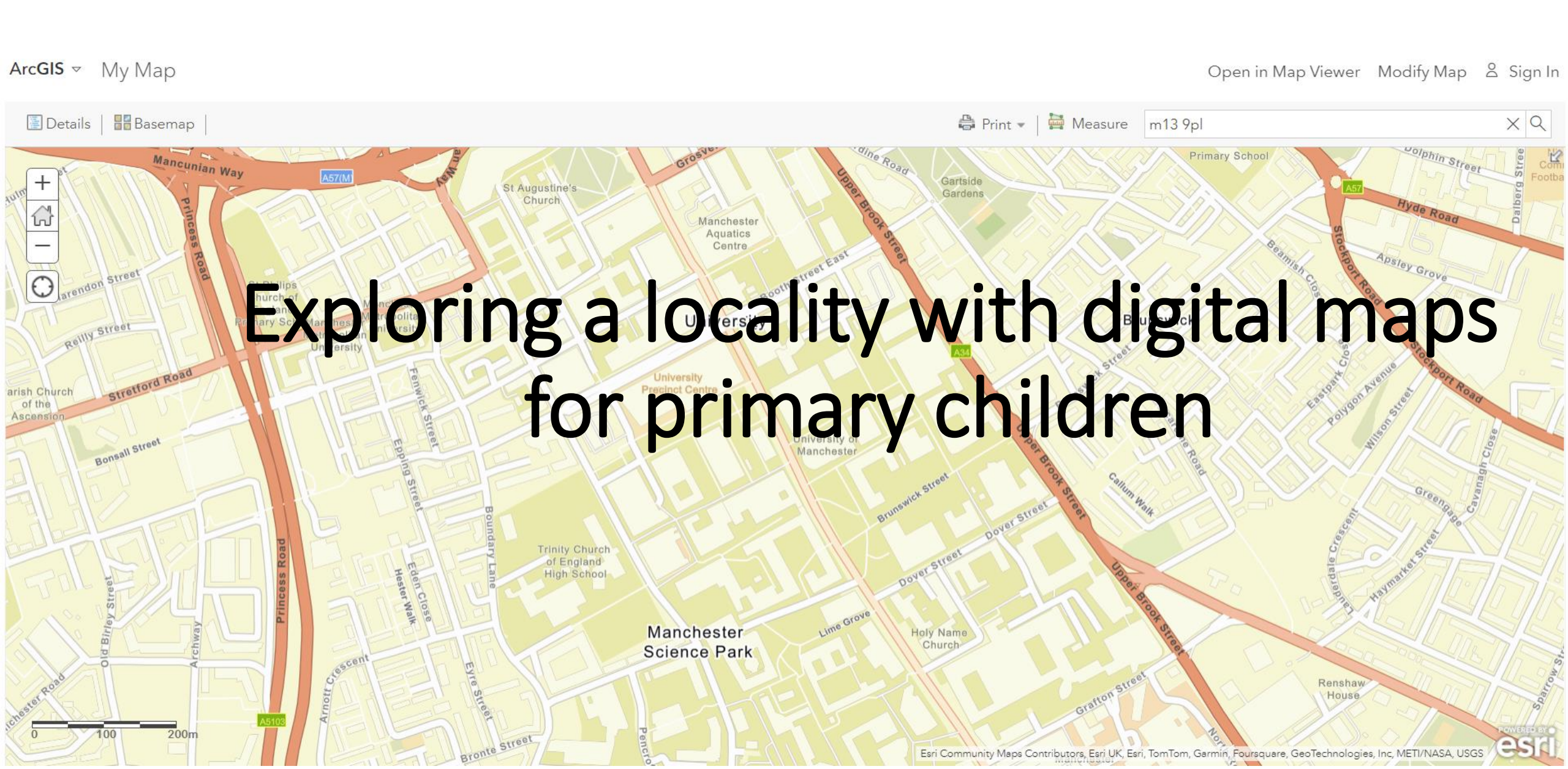
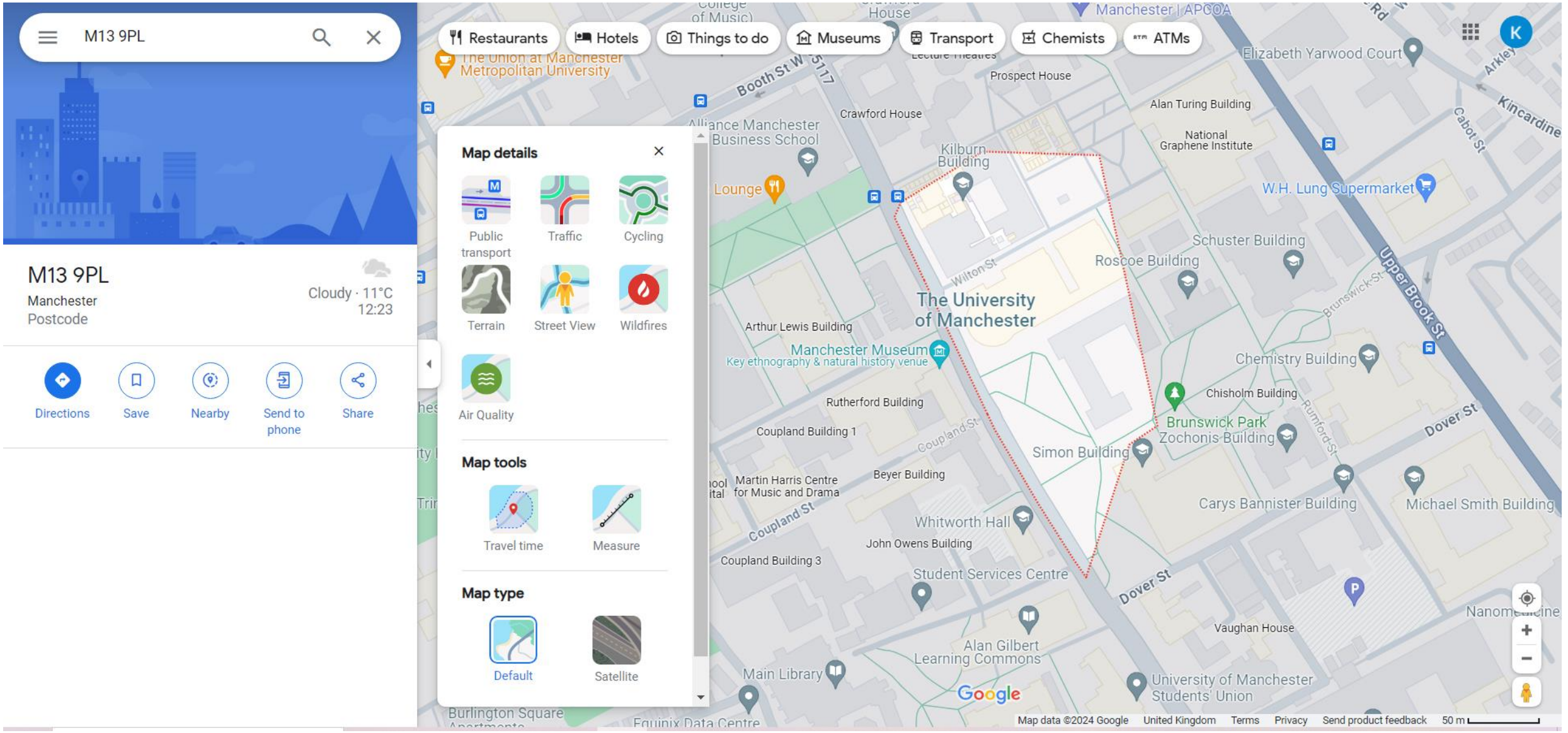

ArcGIS
My Map
Open in Map Viewer
Modify Map
Sign In
Details
Basemap
Print
Measure
m13 9pl
Exploring a locality with digital maps for primary children
Mancunian Way
A57(M)
Princess Road
St Augustine's Church
Manchester Aquatics Centre
Gartside Gardens
Primary School
Upper Brook Street
Hyde Road
Stockport Road
Apsley Grove
Beamish Close
Eastpark Close
Polygon Avenue
Wilson Street
Cavanagh Close
Greenage
Haymarket Street
Dalberg Street
Dolphin Street
Clarendon Street
Reilly Street
Stretford Road
Bonsall Street
Fenwick Street
Epping Street
Boundary Lane
Eden Close
Hester Walk
Old Birley Street
Archway
Arnott Crescent
Eyre Street
Bronte Street
University Precinct Centre
University of Manchester
Brunswick Street
Dover Street
Lime Grove
Trinity Church of England High School
Manchester Science Park
Holy Name Church
Callum Walk
Grafton Street
Renshaw House
Lauderdale Crescent
A34
A5103
0
100
200m
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
esri

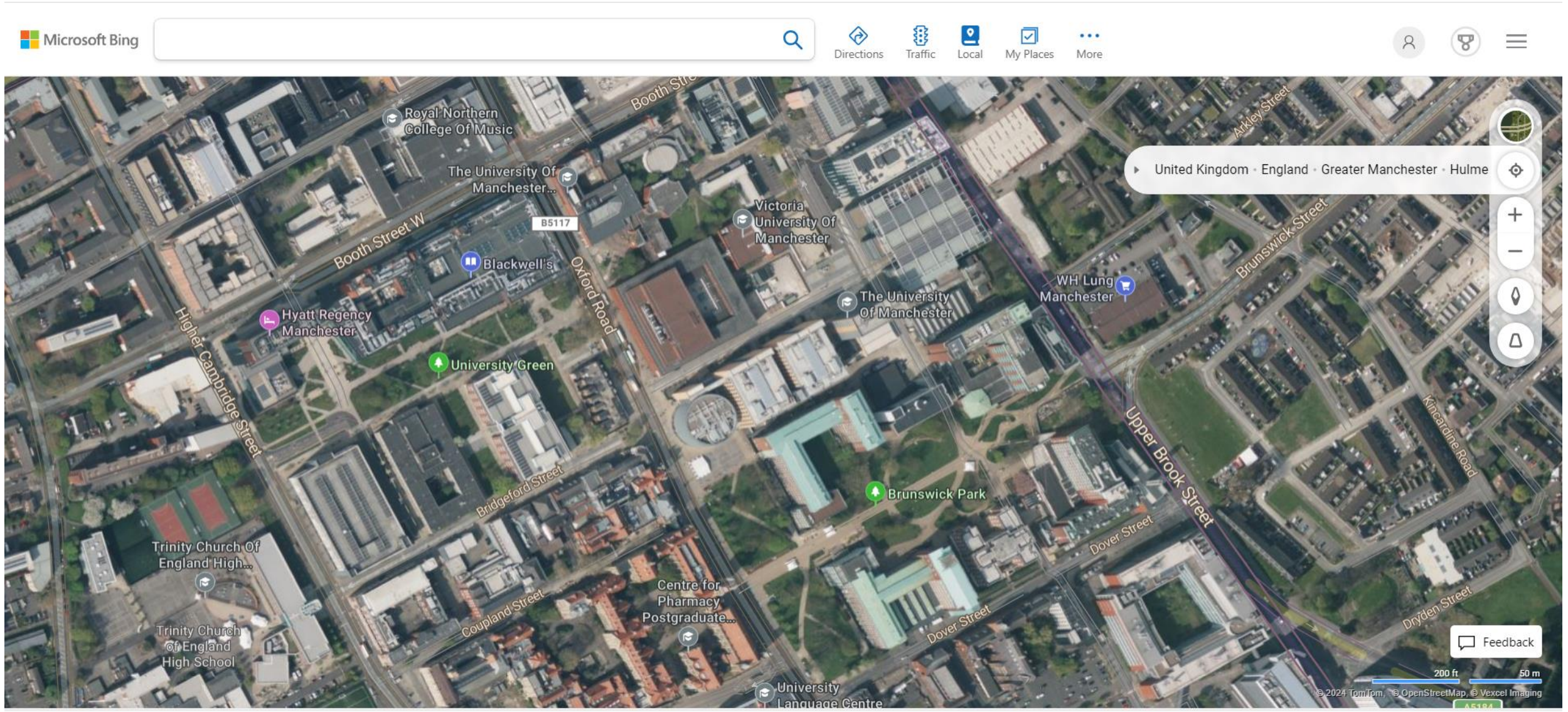
Getting our Bearings: Ofsted subject report – September 2023

- The national curriculum sets out some resources that pupils should become more proficient in using through their schooling. These include different types of maps, including topographical as well as topological maps, maps at various scales, and both digital maps and maps in hard copy. They also include atlases, globes, aerial and satellite imagery, and GIS.
- They (subject leaders) were unaware of digital packages that would have helped them to teach GIS if they chose to do so in this phase.

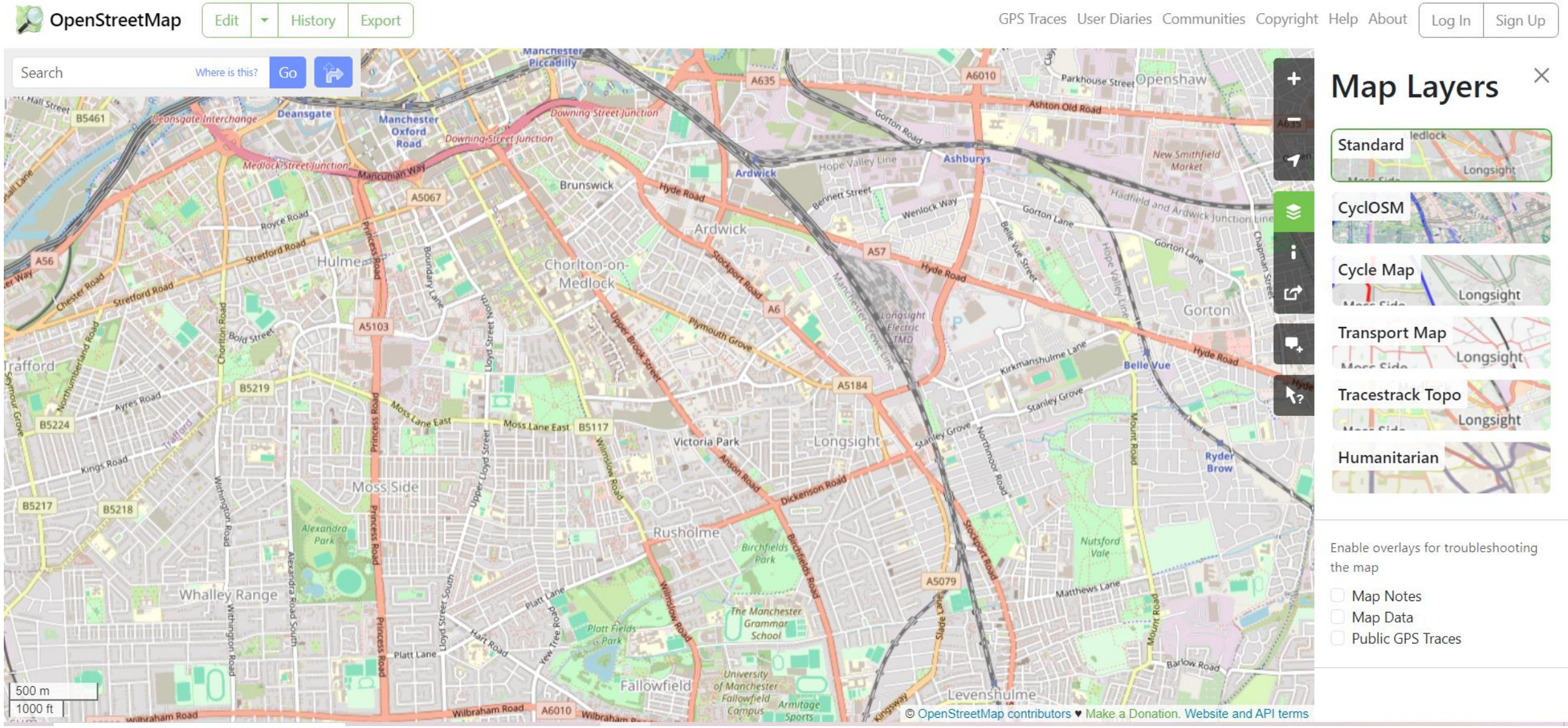
Google Maps https://google.com/maps/



Bing Maps https://bing.com/maps/



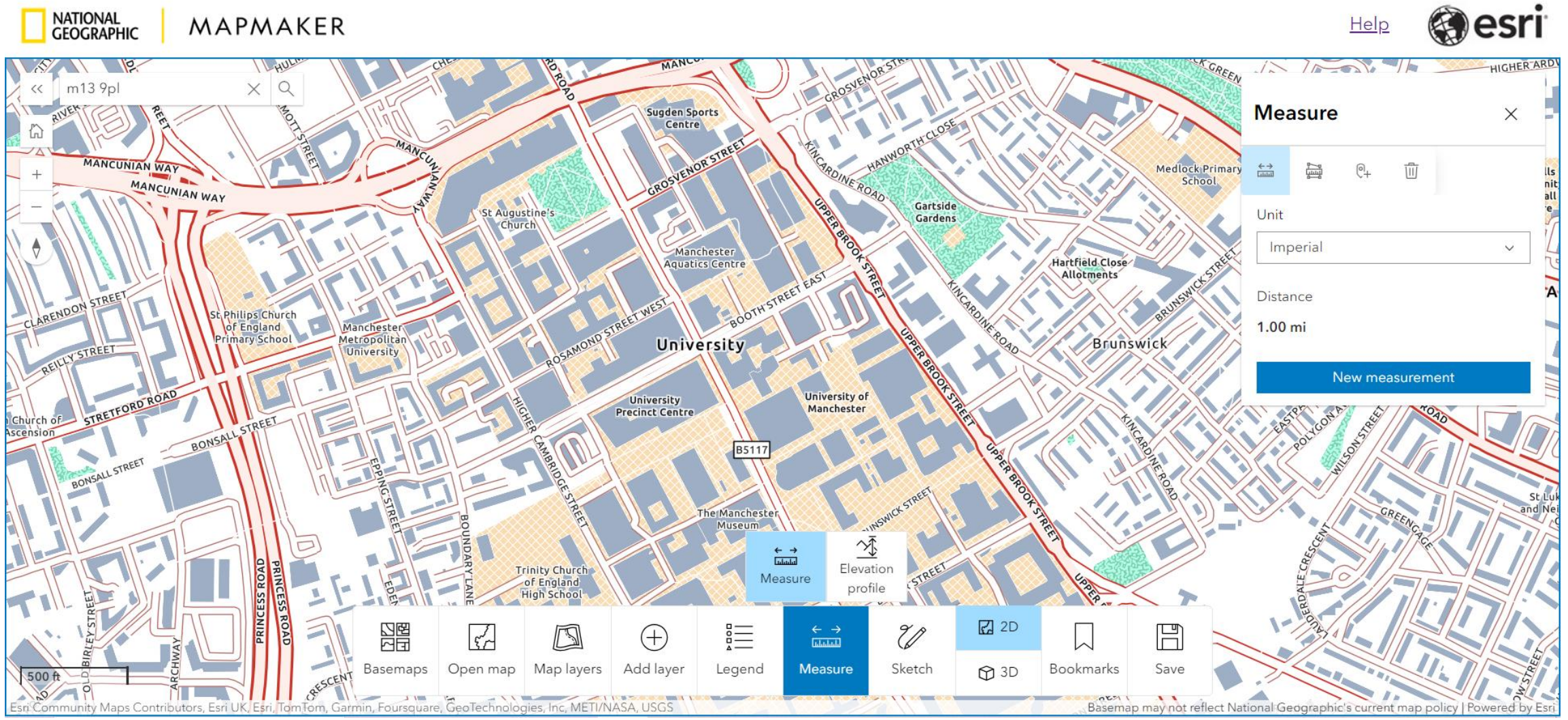
Open Street Map openstreetmap.org



Map Maker

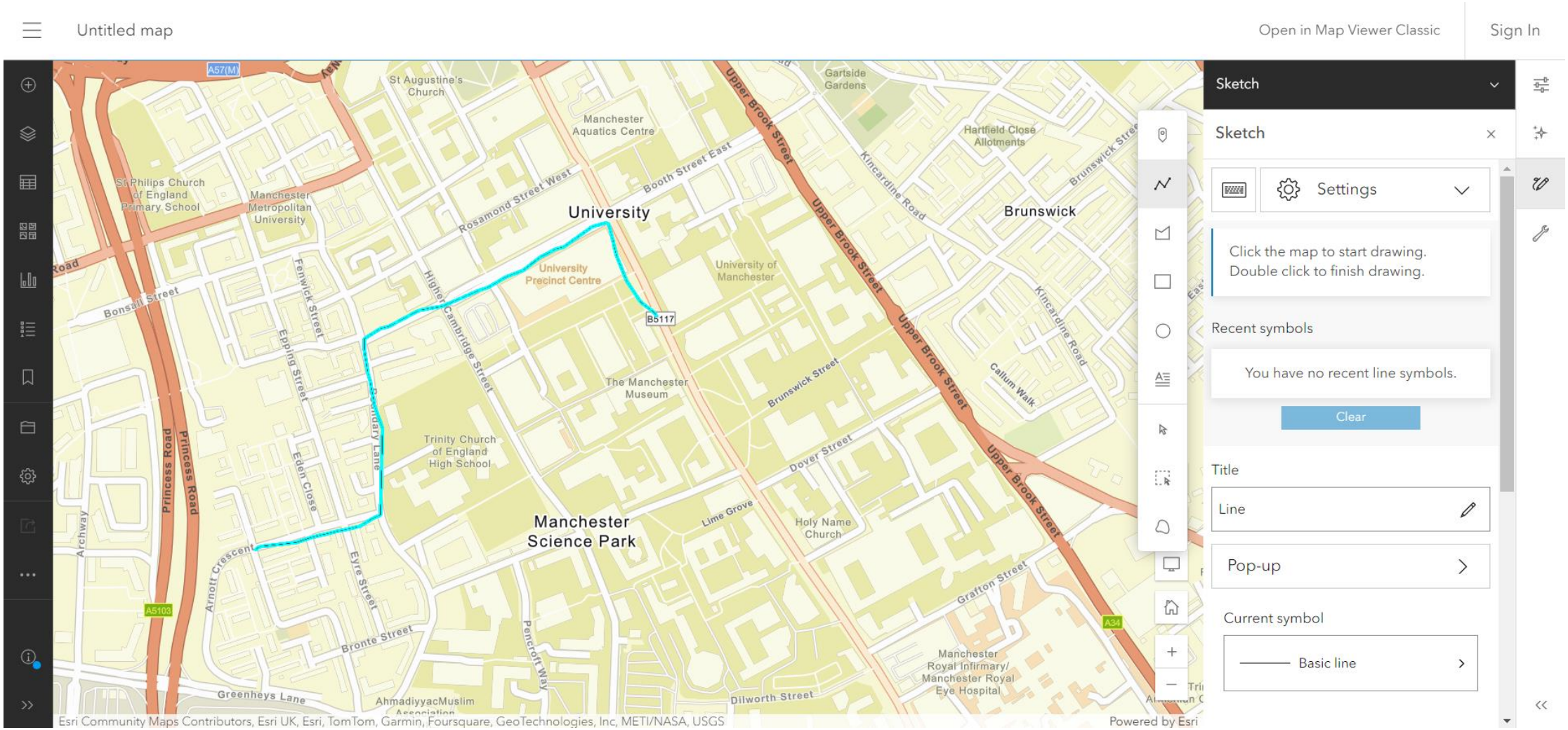
https://mapmaker.nationalgeographic.org/home

National Geographic and ESRI



ArcGIS My Map and Map Viewer

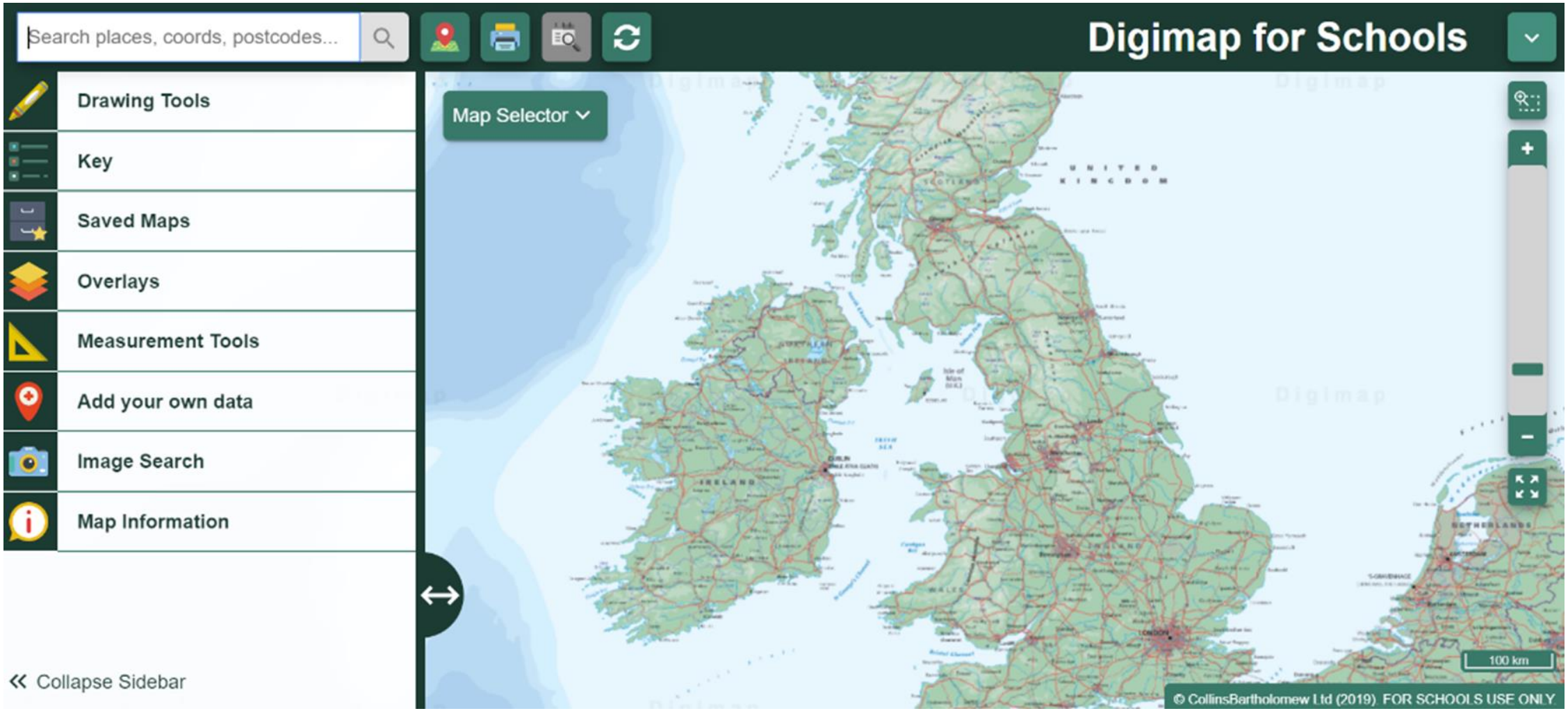
https://www.arcgis.com/home/webmap/viewer.html



Scribble Maps https://www.scribblemaps.com

DigiMap for Schools – visit OS on Stand 32

https://digimapforschools.edina.ac.uk/

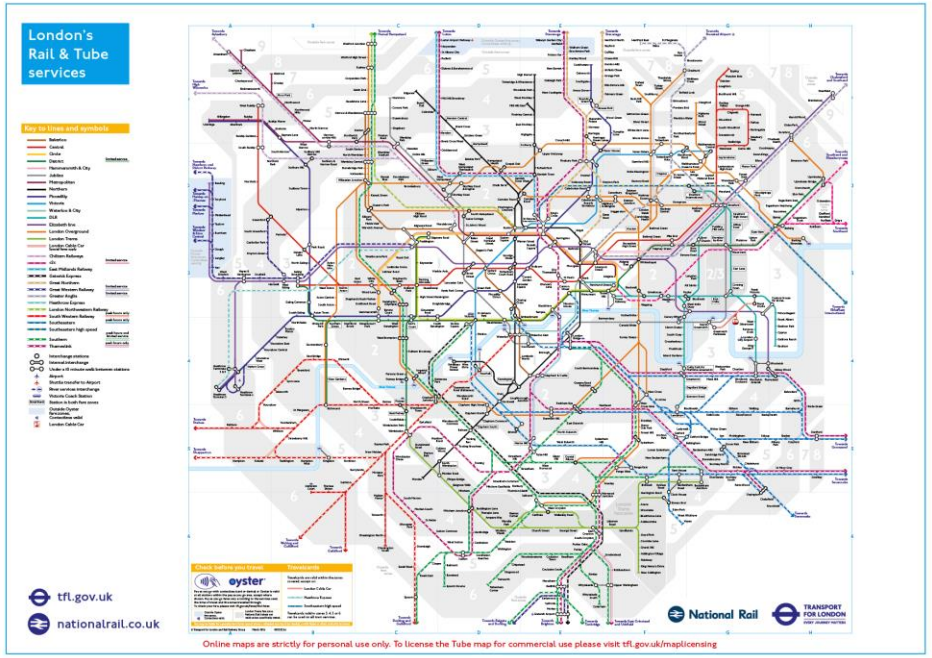


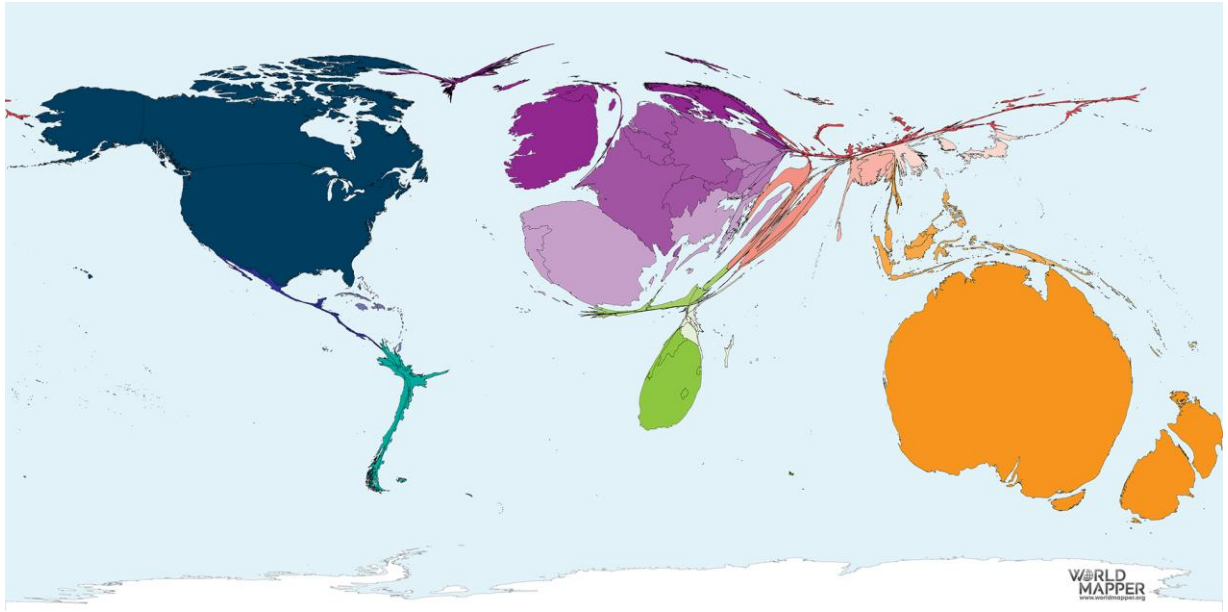
Digital maps skills for primary children to practise

- Search for a place – using post code or placename
- Zoom in and out – to change the scale of map
- Panning – moving the map to see the area around the locality
- Change the type of map – street / aerial / Ordnance Survey
- Adding layers of information or data – street names, places of interest, transport routes
- Measure distances
- Personalising the map – adding routes, photographs, text and labels
- Interpreting what a place is like using a variety of different maps

Topological maps

London underground





World Mapper

Migration from UK 1990 – 2017

https://worldmapper.org/

Websites suggested

- Google Maps https://google.com/maps/
- Bing Maps https://bing.com/maps/
- Open Street Map https://openstreetmap.org
- Map Maker https://mapmaker.nationalgeographic.org/home
- ArcGIS My Map and Map Viewer
  https://www.arcgis.com/home/webmap/viewer.htm
  https://www.arcgis.com/apps/mapviewer/index.html
- Scribble maps https://www.scribblemaps.com/
- DigiMap for Schools https://digimapforschools.edina.ac.uk/
- WorldMapper https://worldmapper.org

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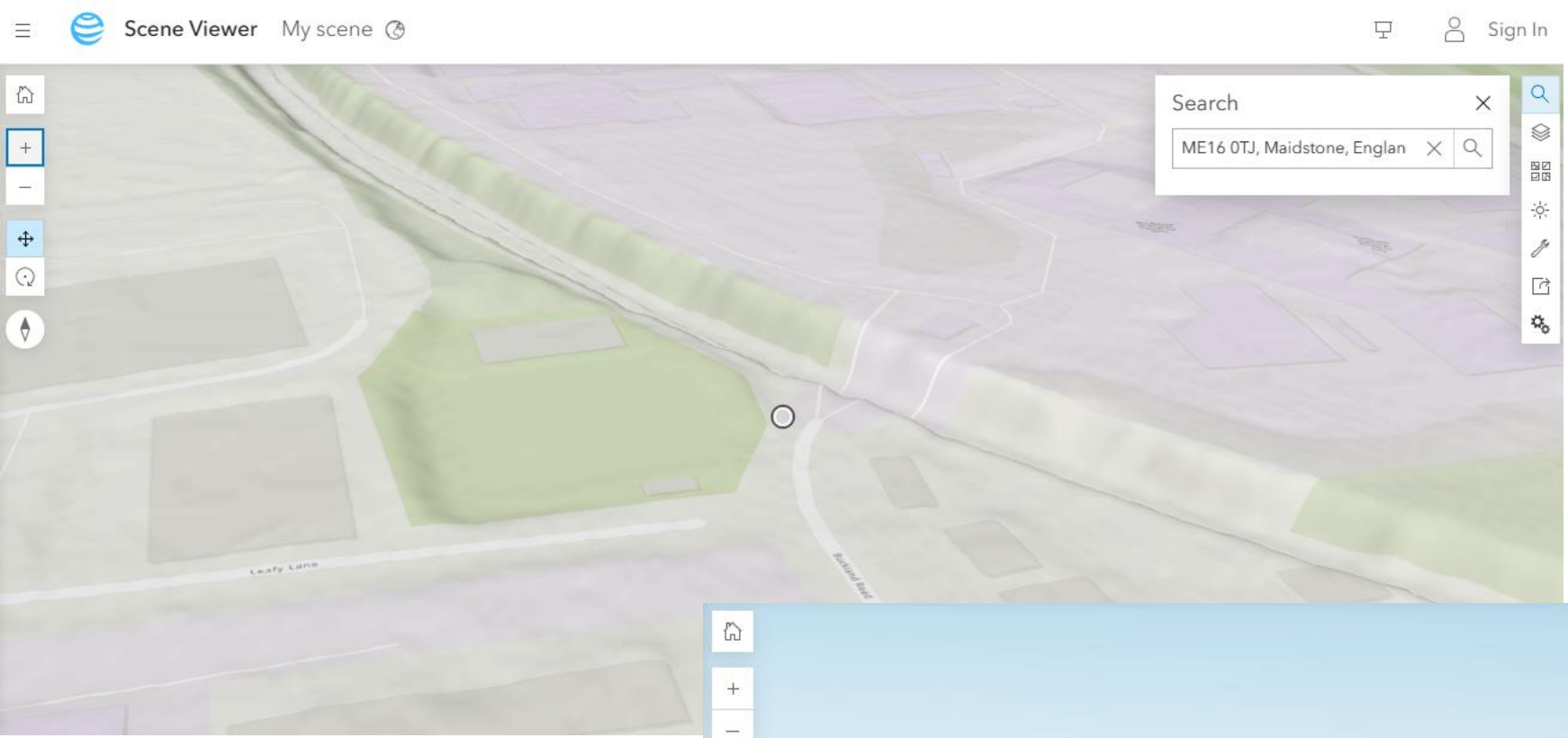
Quick ways with 3D scenes

Heidi Quenby

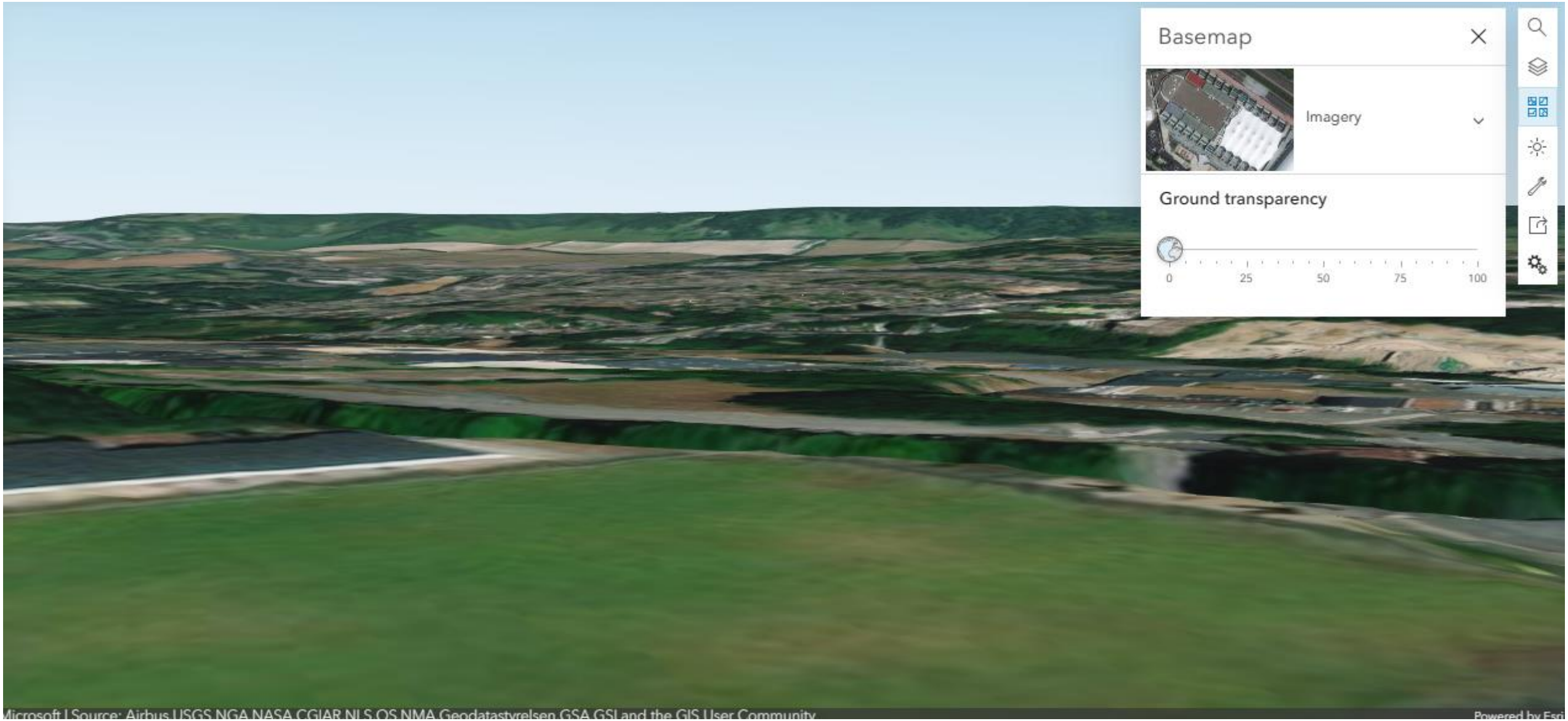
ArcGIS scene viewer

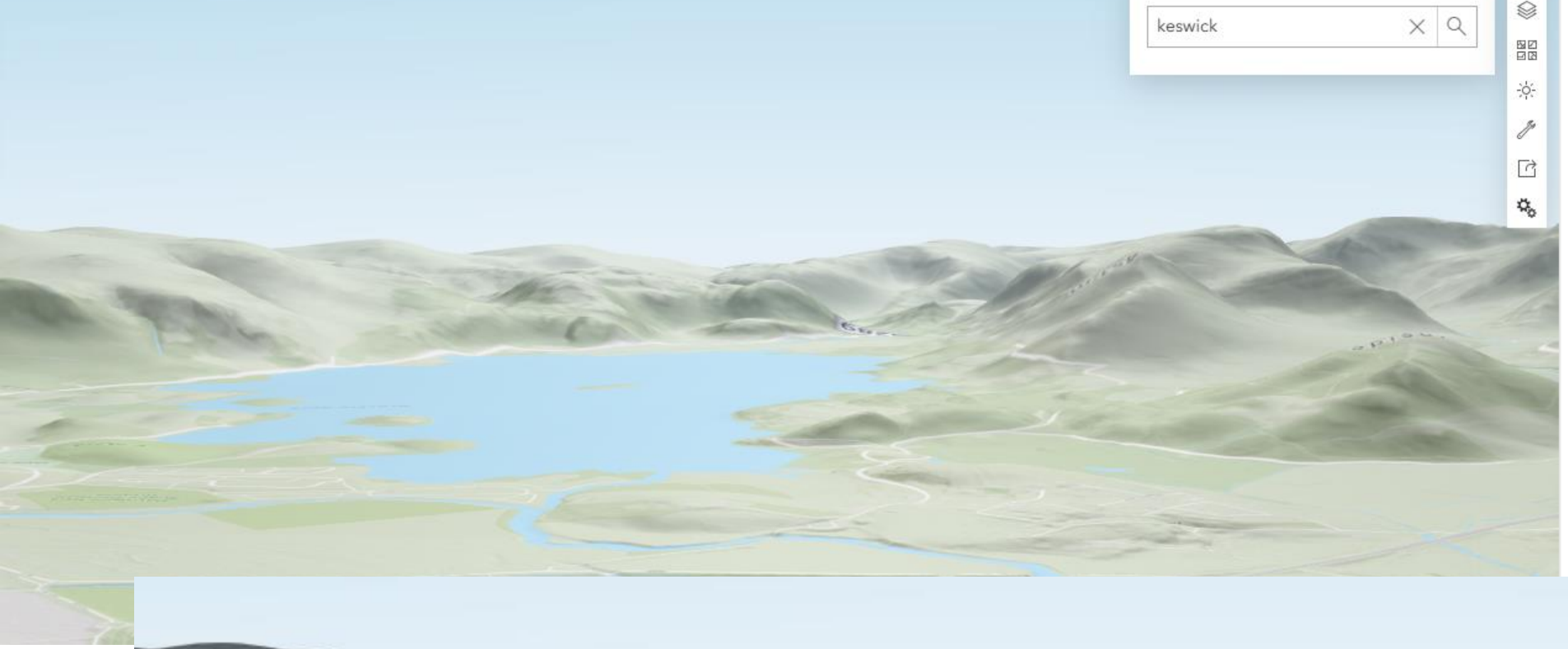
- No account needed for any of the following features
- Good introduction to topography (and understanding features as a result)
- Can be used at all ages
- Can be front of class or can give to students to investigate

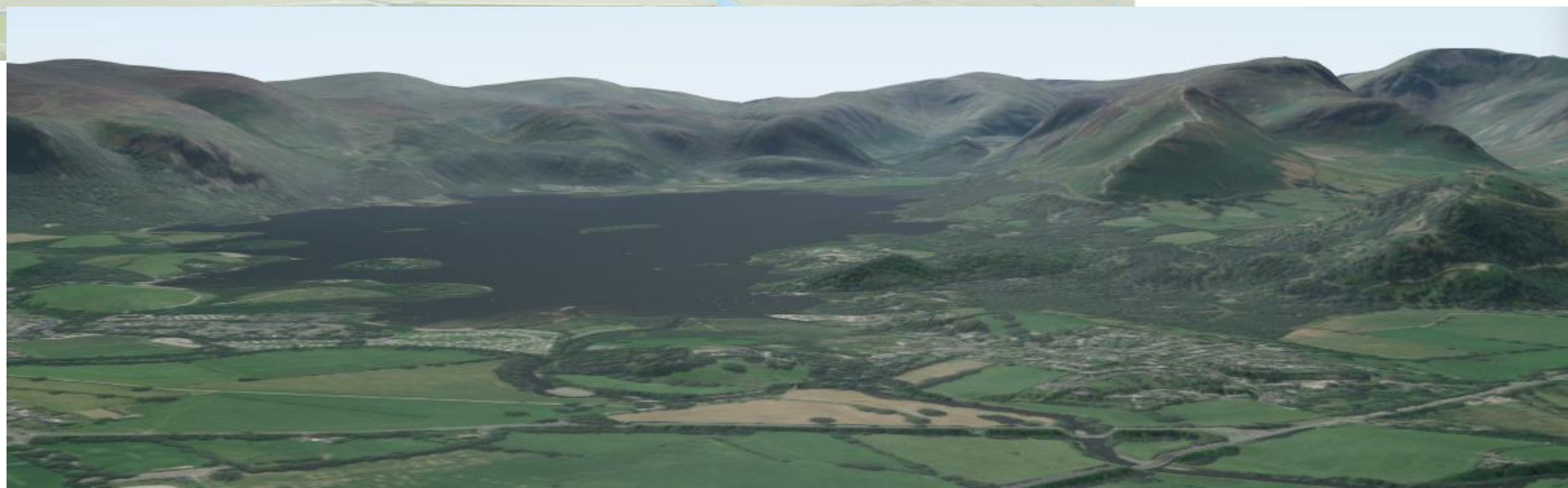
But… be aware of building distortion when using imagery

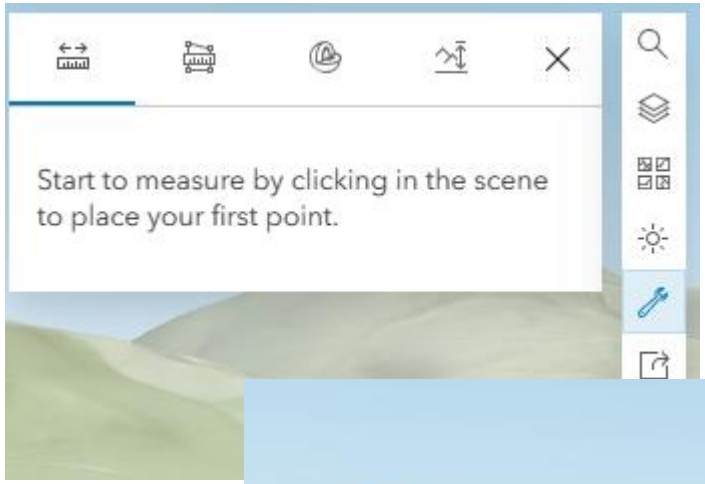

Scene Viewer
My scene
Sign In
Search
ME16 0TJ, Maidstone, Englan
Leafy Lane
Bicklond Road


Search
ME16 0TJ, Maidstone, Englan

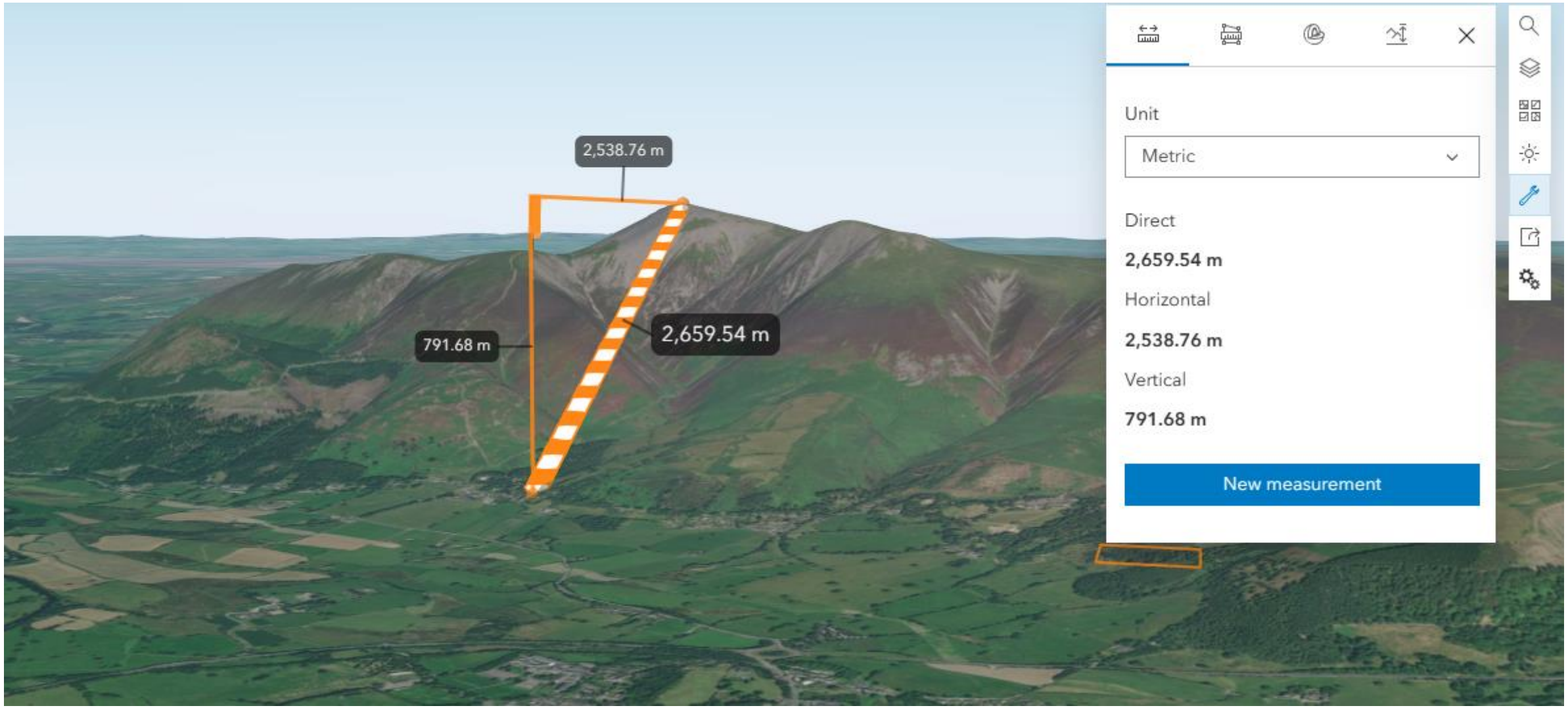

Basemap
Imagery
Ground transparency
0
25
50
75
100
Microsoft | Source: Airbus, USGS, NGA, NASA, CGIAR, N Ls, OS, NMA, Geodatastyrelsen, GSA, GSI and the GIS User Community
Powered by Esri

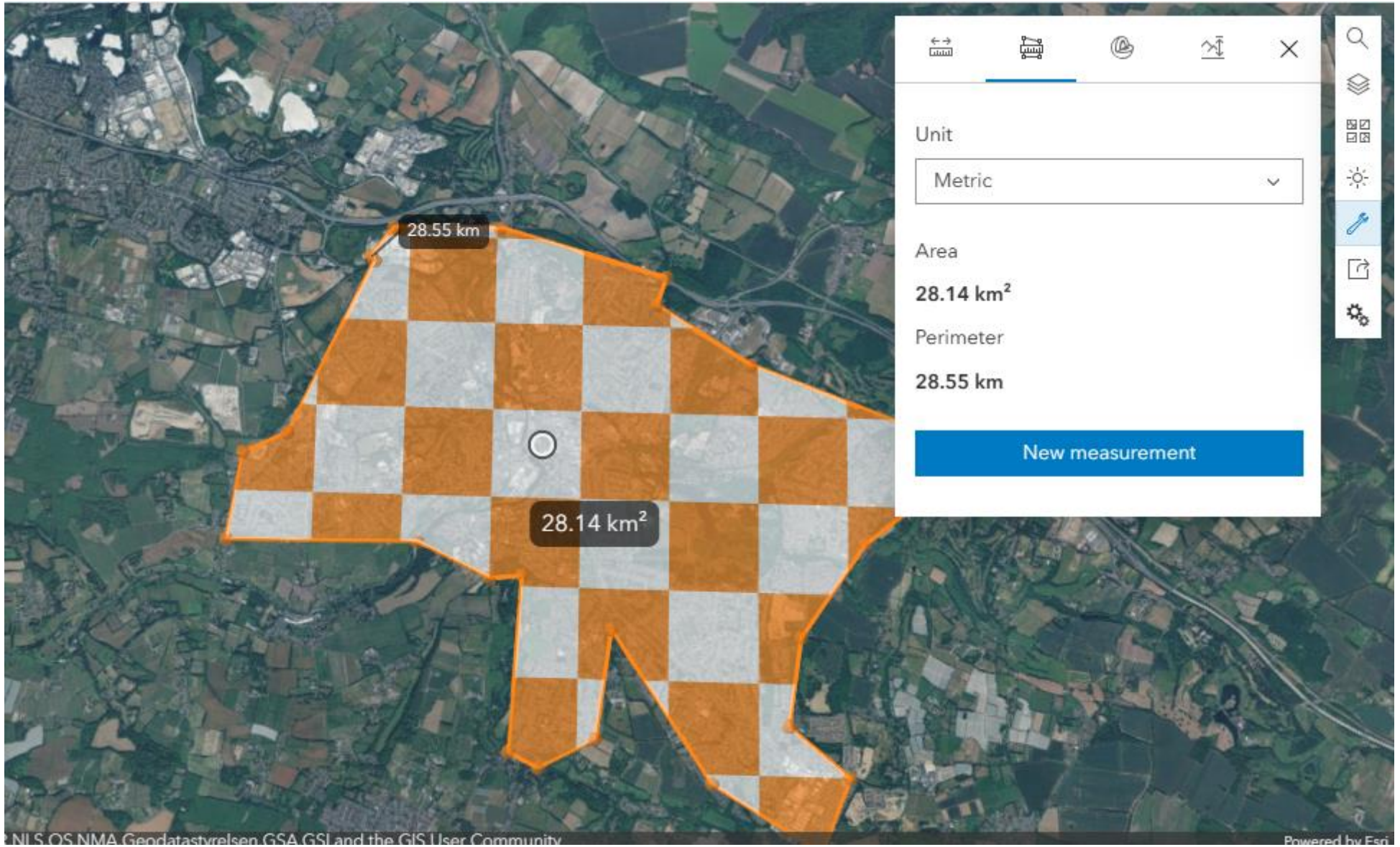

keswick




Start to measure by clicking in the scene to place your first point.

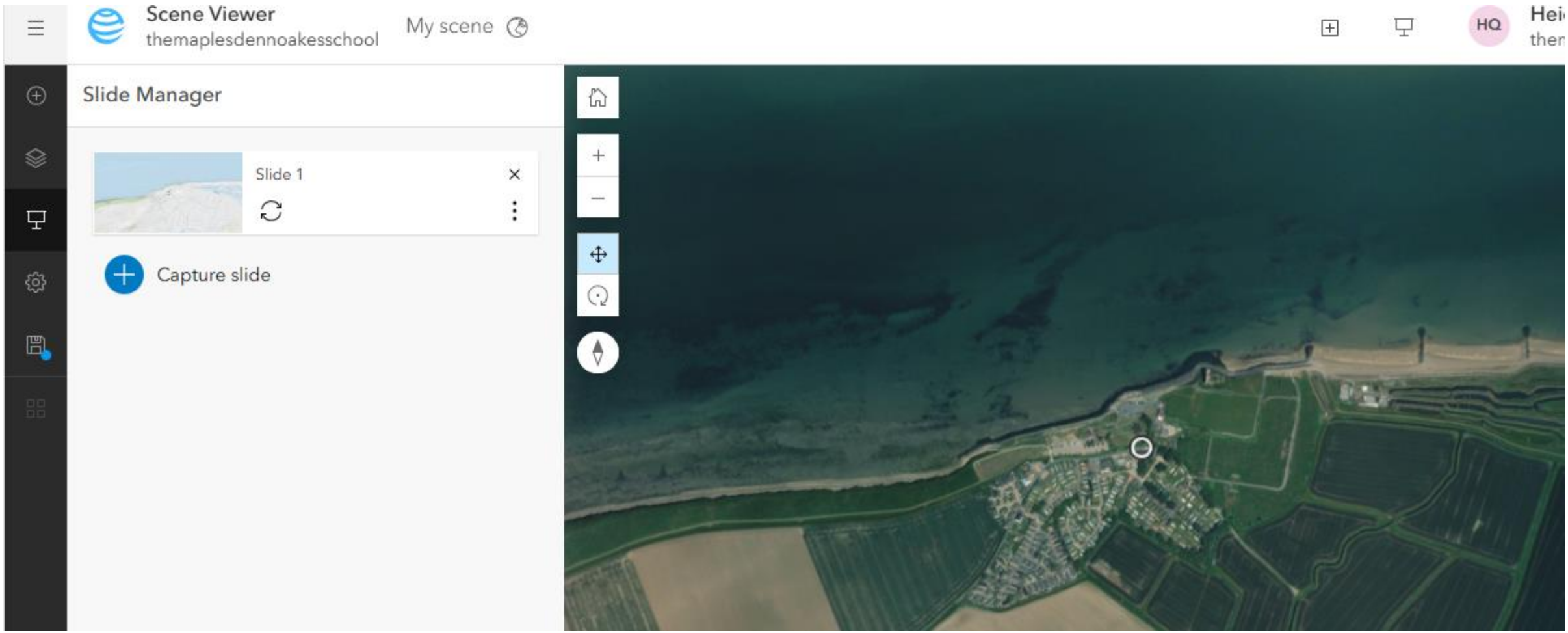

600 m
400 m
200 m
1 km
2 km
Ground
Layers
Line
Select line
New profile

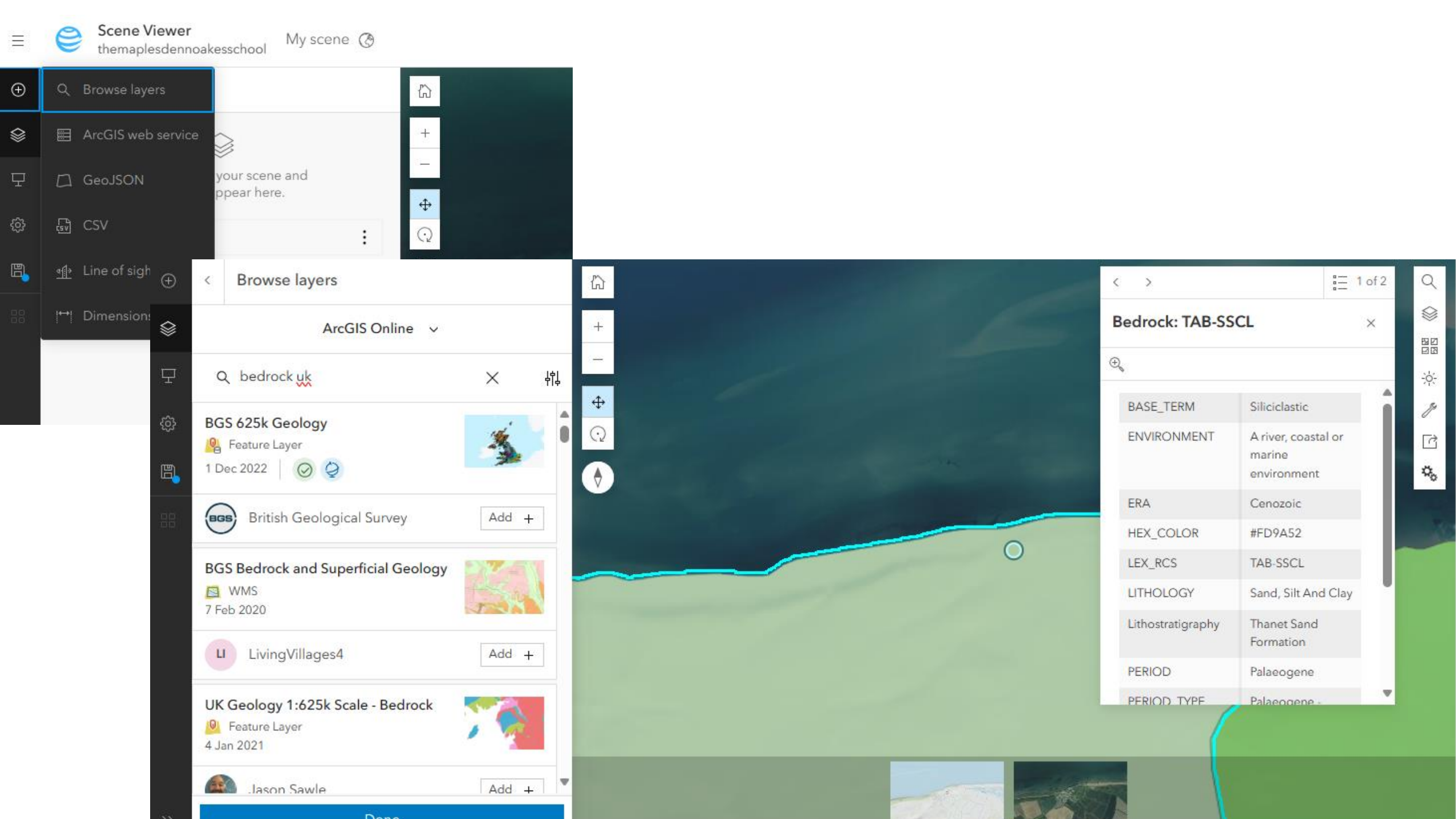

2,538.76 m
791.68 m
2,659.54 m
Unit
Metric
Direct
2,659.54 m
Horizontal
2,538.76 m
Vertical
791.68 m
New measurement


28.55 km
28.14 km²
Unit
Metric
Area
28.14 km²
Perimeter
28.55 km
New measurement
Powered by Esri

ArcGIS login

- Logging in allows you to save some of these as slides and review as a presentation.
- Can then present at front of class or could change the sharing level and provide link for students' own investigations


Scene Viewer
themaplesdennoakesschool
My scene
HQ
Slide Manager
Slide 1
Capture slide


Scene Viewer
themaplesdennoakesschool
My scene
Browse layers
ArcGIS web service
GeoJSON
CSV
Line of sigh
Dimensions
your scene and
ppear here.
Browse layers
ArcGIS Online
bedrock uk
BGS 625k Geology
Feature Layer
1 Dec 2022
British Geological Survey
Add
BGS Bedrock and Superficial Geology
WMS
7 Feb 2020
LivingVillages4
Add
UK Geology 1:625k Scale - Bedrock
Feature Layer
4 Jan 2021
Jason Sawle
Add
1 of 2
Bedrock: TAB-SSCL
BASE_TERM
Siliciclastic
ENVIRONMENT
A river, coastal or marine environment
ERA
Cenozoic
HEX_COLOR
#FD9A52
LEX_RCS
TAB-SSCL
LITHOLOGY
Sand, Silt And Clay
Lithostratigraphy
Thanet Sand Formation
PERIOD
Palaeogene

Reculver (arcgis.com)

Google Earth

- Need to use a drive to create a similar presentation
- Imagery can be better in places – but it still doesn't work with tall buildings (eg the Reculver church towers)
- Each slide needs to be based on a place marker – these seem to stay throughout the presentation (could become an overload?)
- Allows you to use google street view

reculver

Slideshow | Share | H

Back to list | Reload

Reculver

H Heidi Quenby

Saved to Google Drive

- Reculver
- Rock armour
- Sea wall
- Undefended
- Reculver Ln


Reculver Ln
Reculver, England
Google


Sea wall
Measure
Click points on the ma
area
Length
11.3 m
Save to project

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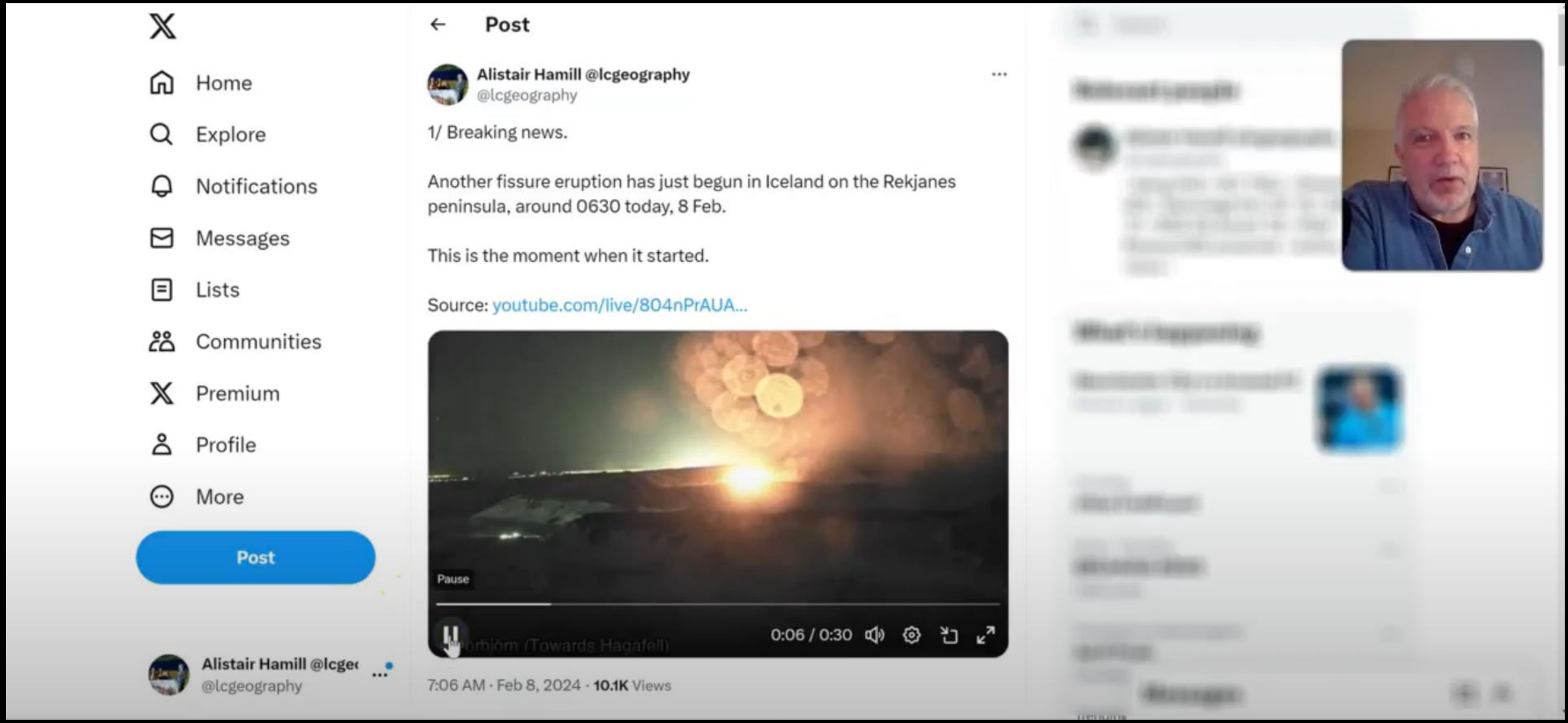
Using Sentinel Hub to observe the ongoing eruptions in Iceland



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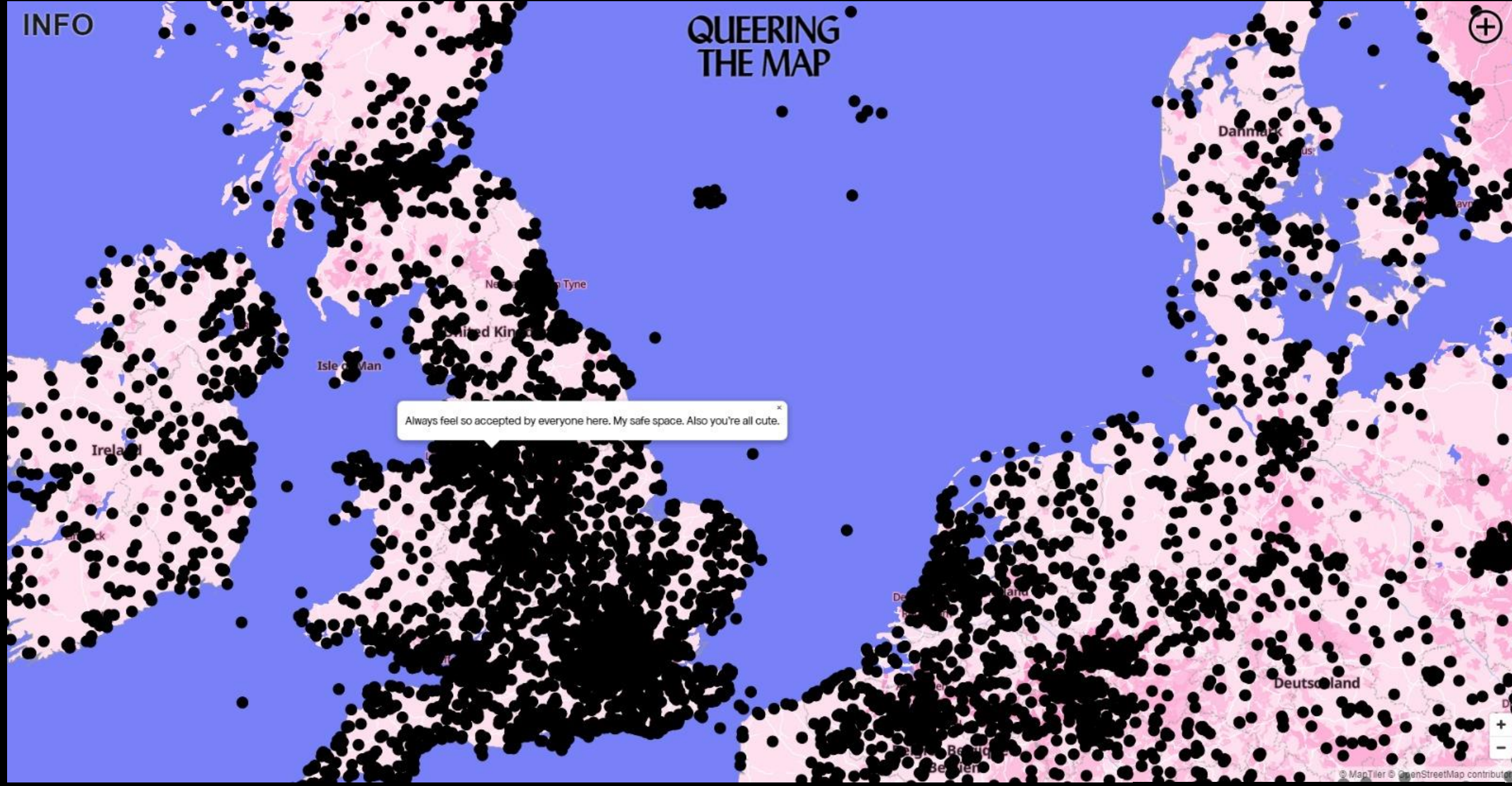

https://www.queeringthemap.com/

Queering the map

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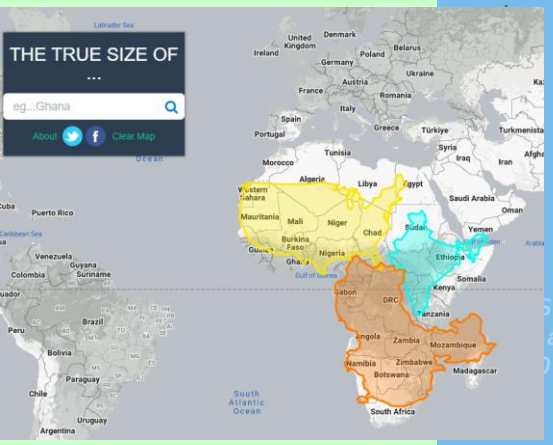
Changing borders



1500 1530 1600 1650 1700 1715 1783 1800 1815 1880 1900 1914 1920 1930 1938 1945 1960 1994 2000 201C

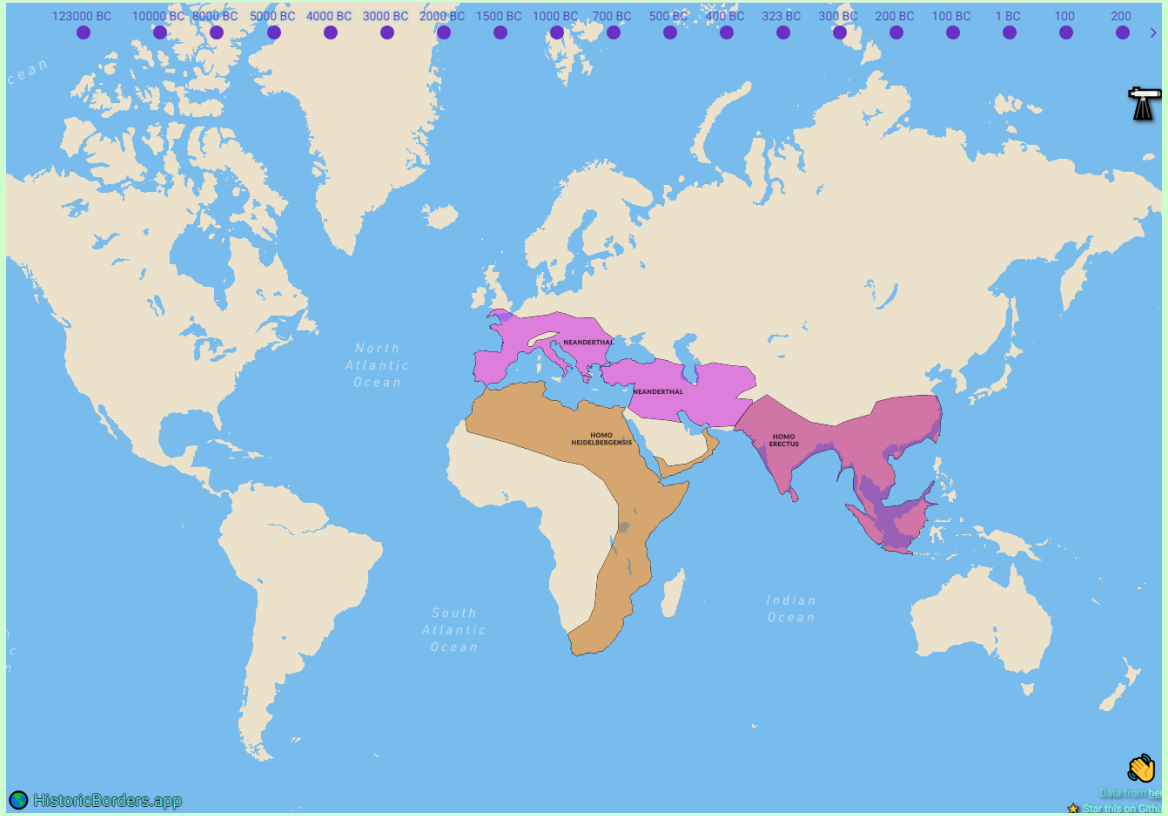
Arctic Ocean
Arctic Ocean
North Pacific Ocean
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean

GREENLAND
ICELAND
CANADA
UNITED STATES
UNITED STATES
MEXICO
CUBA
JAMAICA
PUERTO RICO
NICARAGUA
PANAMA
TRINIDAD
COLOMBIA
GUYANA
PERU
BRAZIL
BOLIVIA
PARAGUAY
ARGENTINA
CHILE
RAPA NUI
SWEDEN
FINLAND
NORWAY
DENMARK
LATVIA
BELARUS
UNITED KINGDOM
FRANCE
ROMANIA
SPAIN
MALTA
MOROCCO
WESTERN SAHARA
ALGERIA
MAURITANIA
SENEGAL
BURKINA FASO
NIGER
CHAD
SUDAN
SIERRA LEONE
GHANA
CENTRAL AFRICAN REPUBLIC
ETHIOPIA
CONGO
SOMALIA
TANZANIA, UNITED REPUBLIC OF
ANGOLA
MALAWI
NAMIBIA
MADAGASCAR
SOUTH AFRICA
RUSSIA
KAZAKHSTAN
GEORGIA
UZBEKISTAN
MONGOLIA
RUSSIA
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
IRAQ
IRAN
QATAR
YEMEN
CHINA
BHUTAN
INDIA
SRI LANKA
TAIWAN
PHILIPPINES
THAILAND
CAMBODIA
MALAYSIA
PAPUA NEW GUINEA
FIJI
AUSTRALIA
NEW ZEALAND

HistoricBorders.app
Maps Updated: Jan 8, 2024

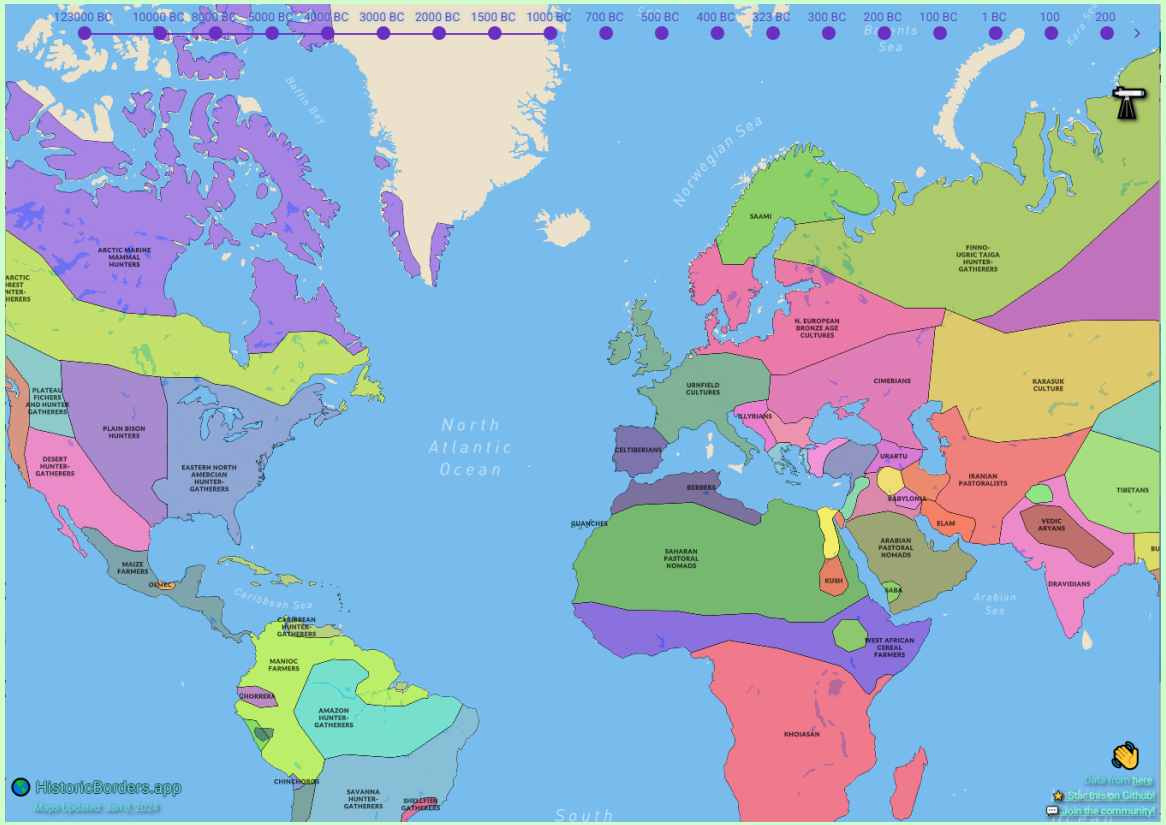
HistoricBorders.app

HistoricBorders.app



123000 BC

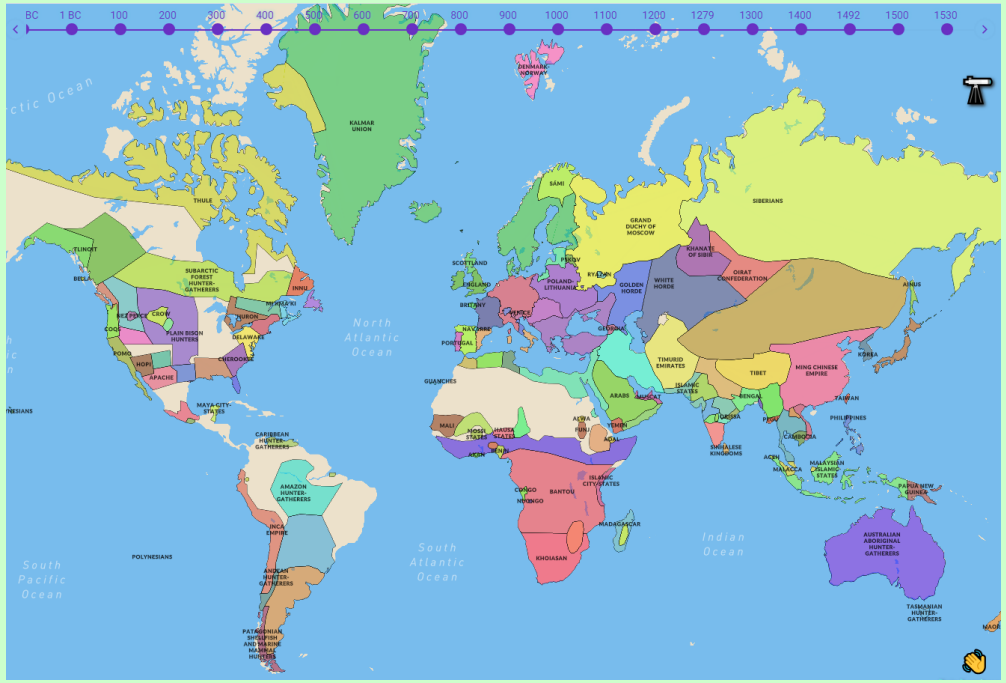
1000 BC



1 BC

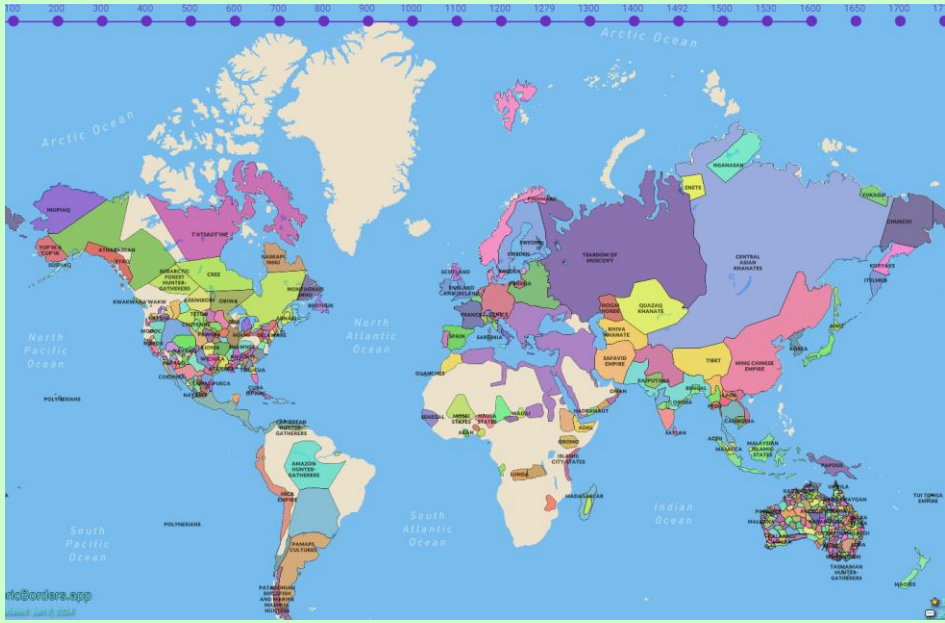
1000 BC

HistoricBorders.app



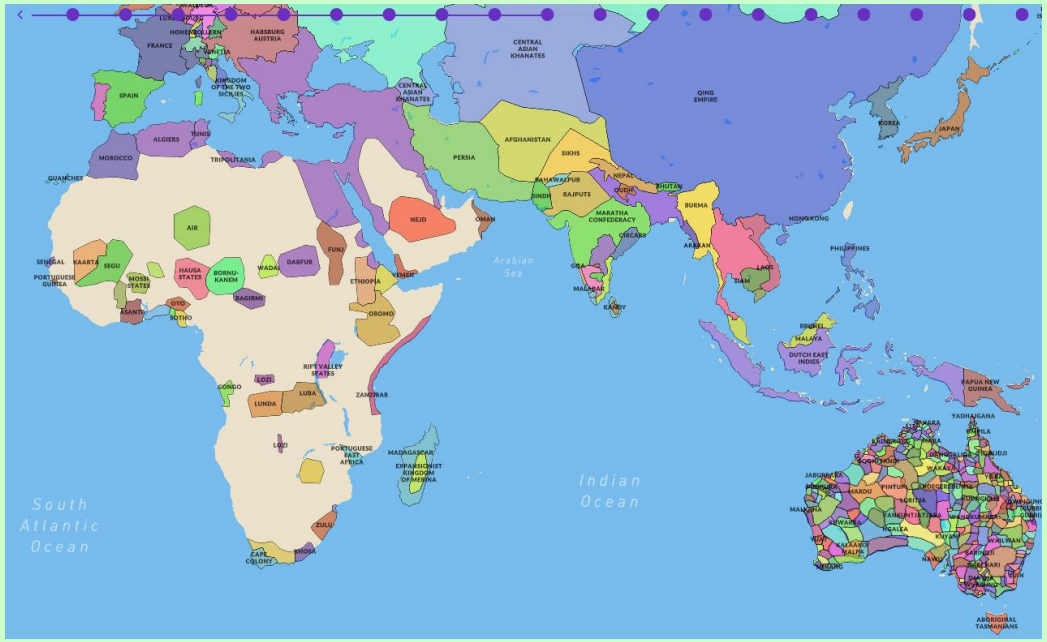
1500 BC

1600 BC

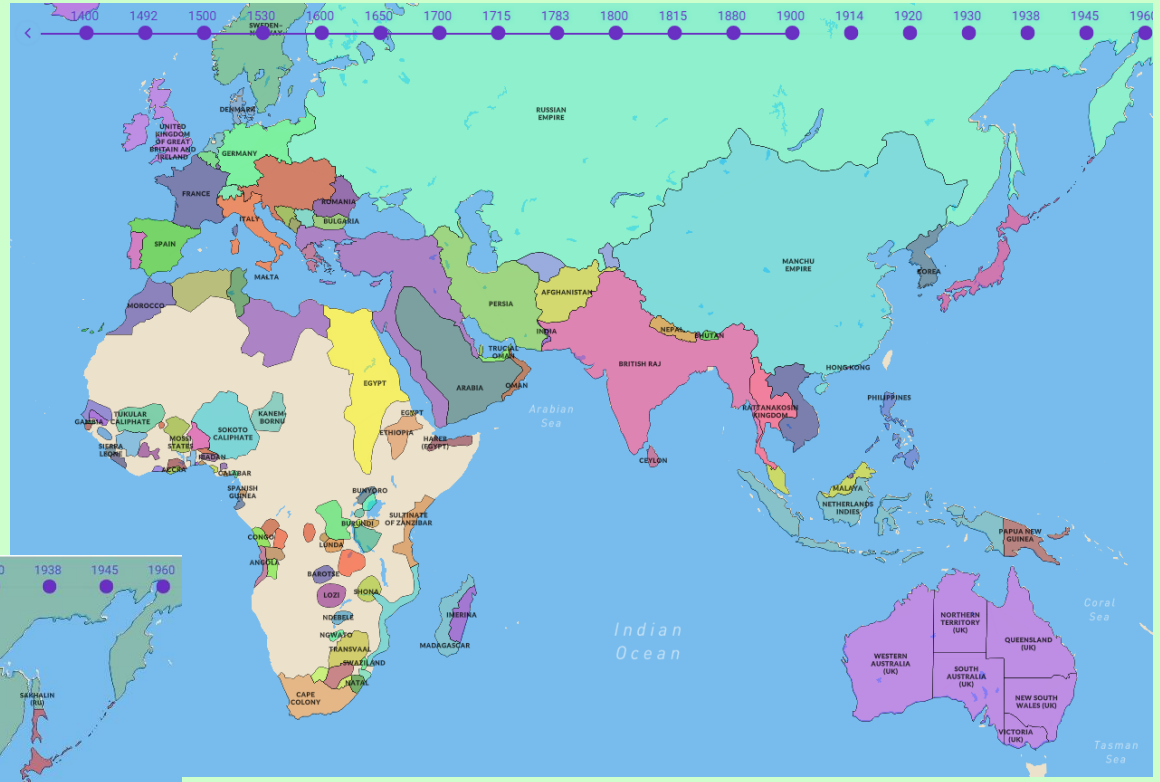


HistoricBorders.app

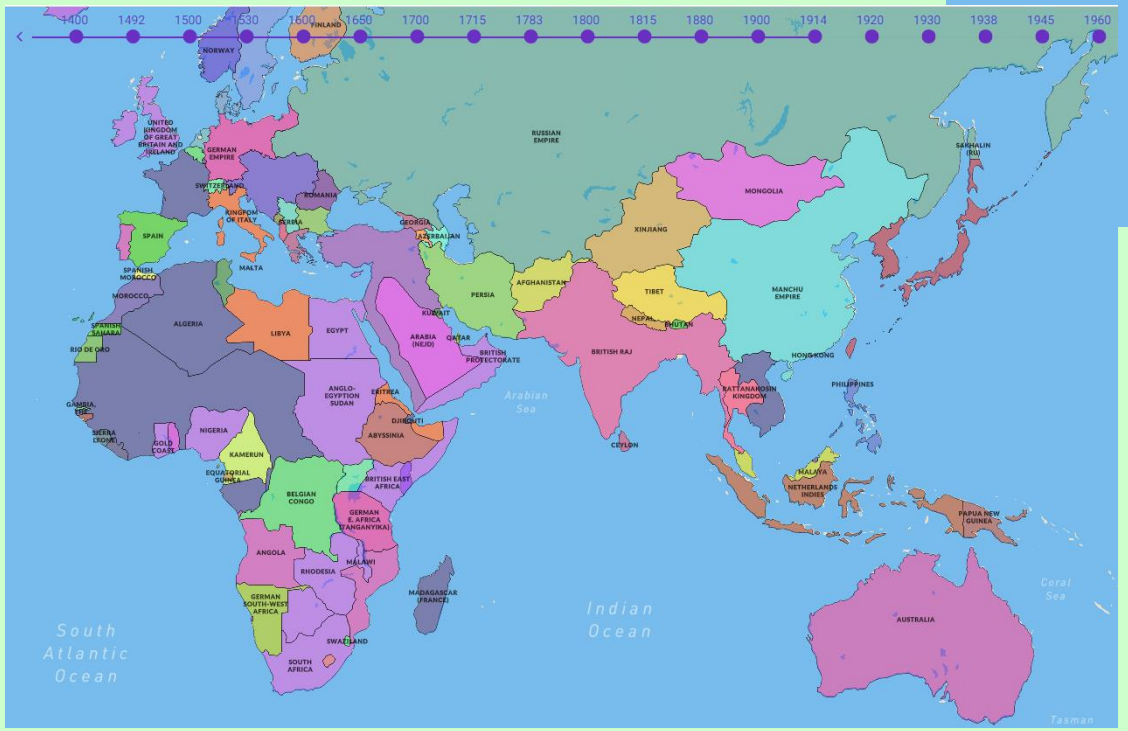
1800



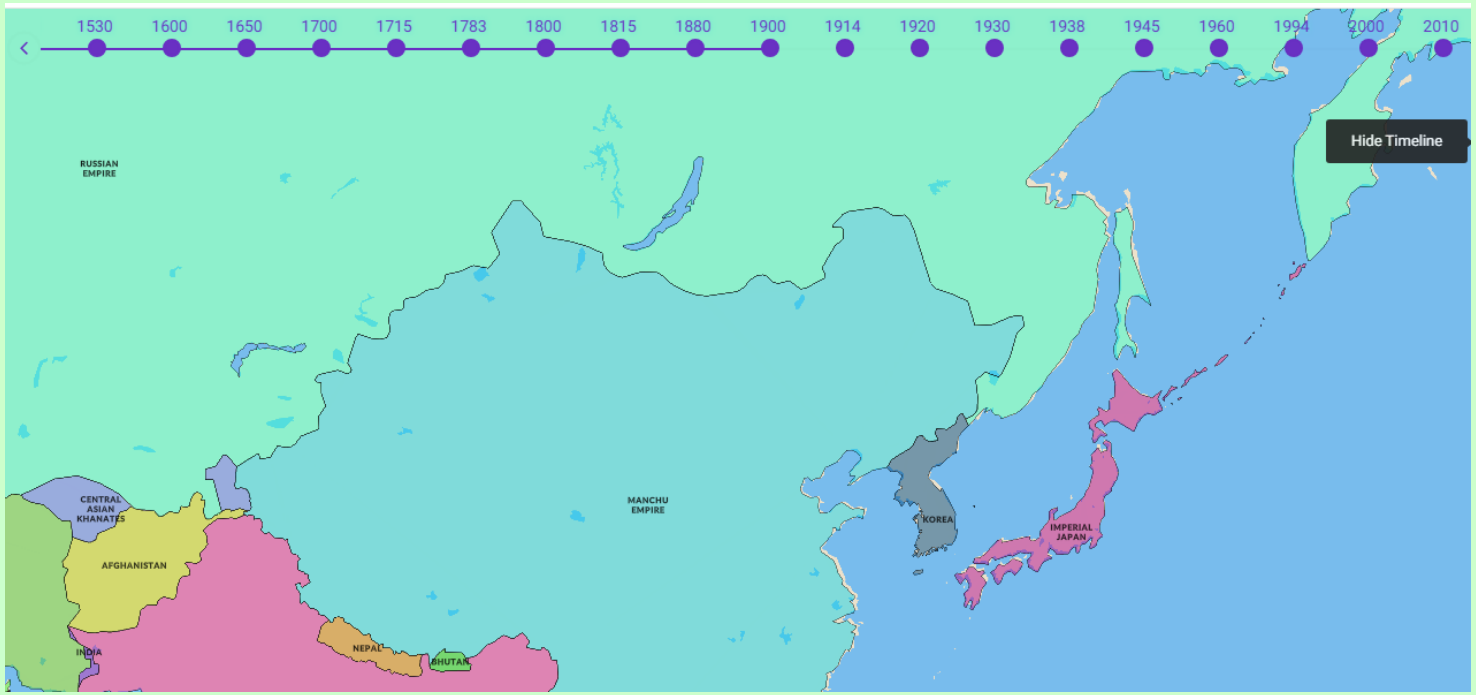
1900



1914

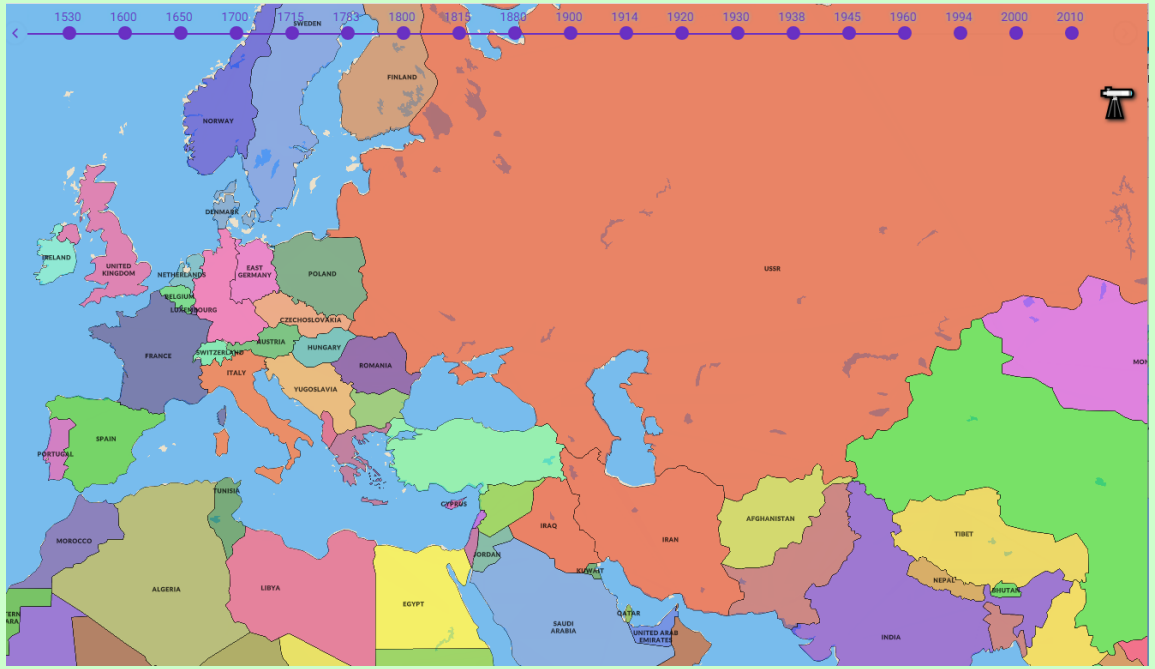


HistoricBorders.app



1900

1938



1960

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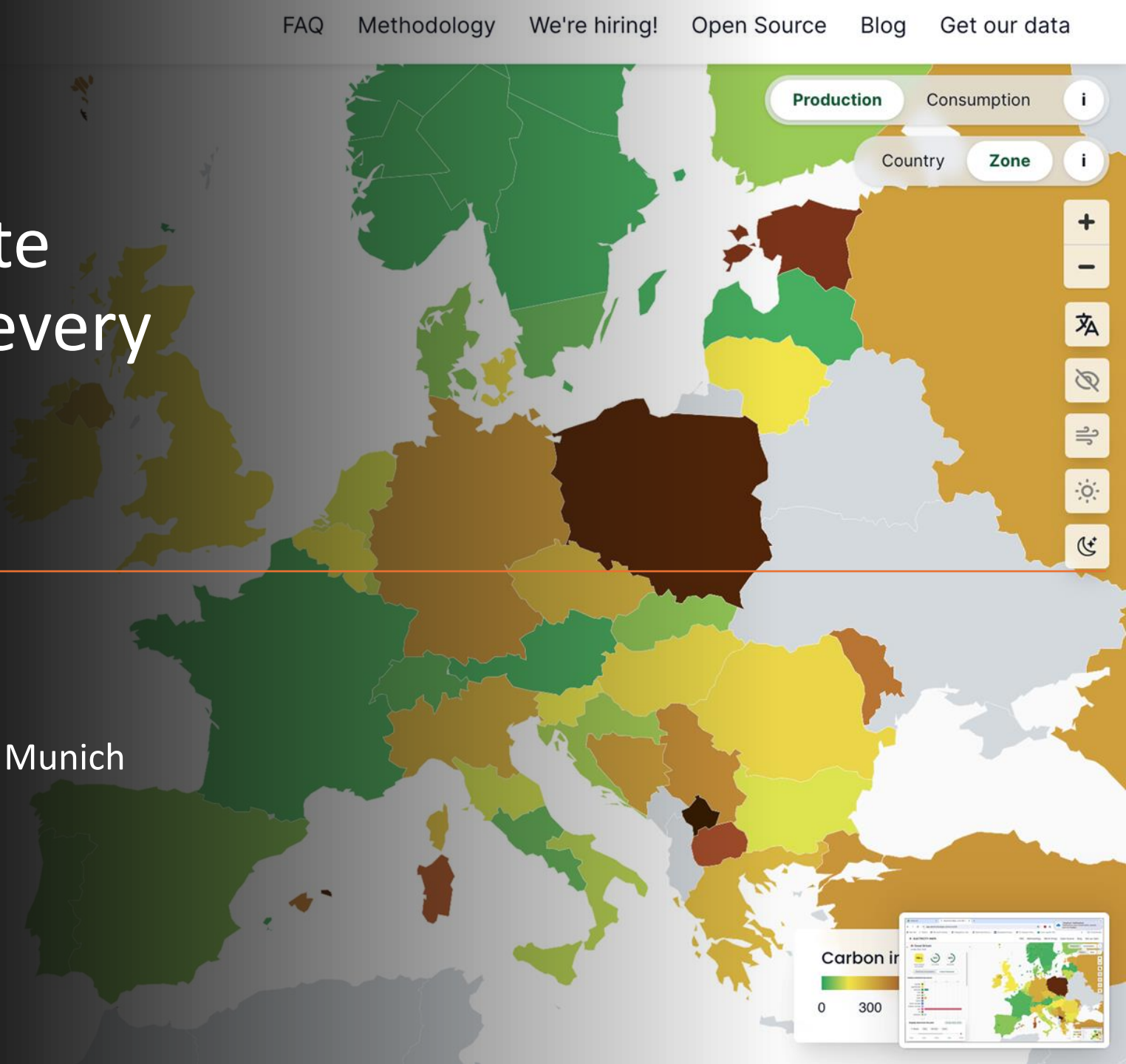
Easy ways to integrate REAL-TIME GIS into every lesson

Joanne Meredith

Teacher of Geography

St.George's British International School, Munich



Rationale

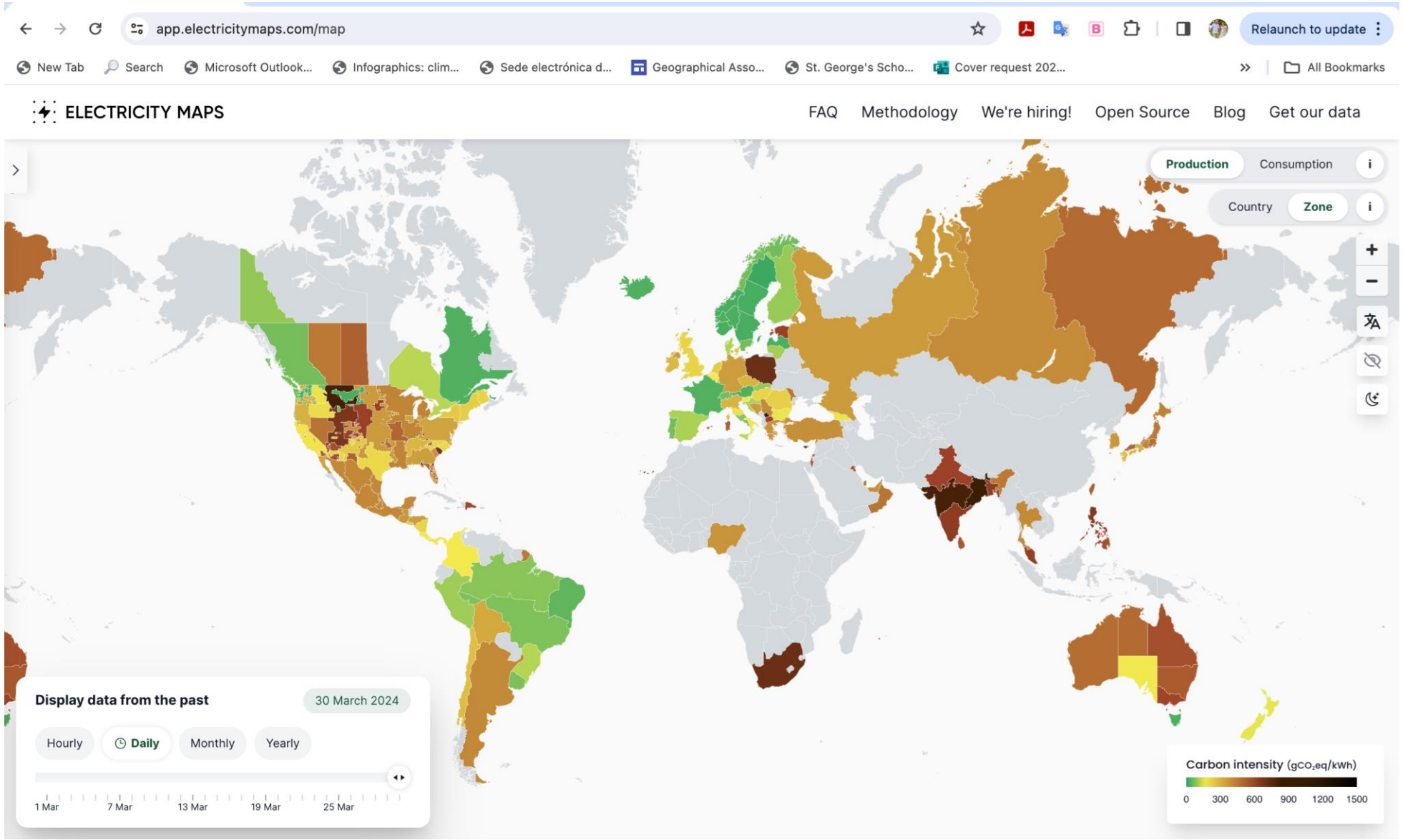
- Many teachers don’t know where to start with GIS
- Not sure how to integrate GIS into lessons
- Real-time GIS offers dynamic and interactive learning experiences for students
- It provides current, relevant data, fostering a deeper understanding of geographical concepts
- Engages students by connecting classroom learning with real-world applications
- Enhances critical thinking, problem-solving, and spatial analysis skill development

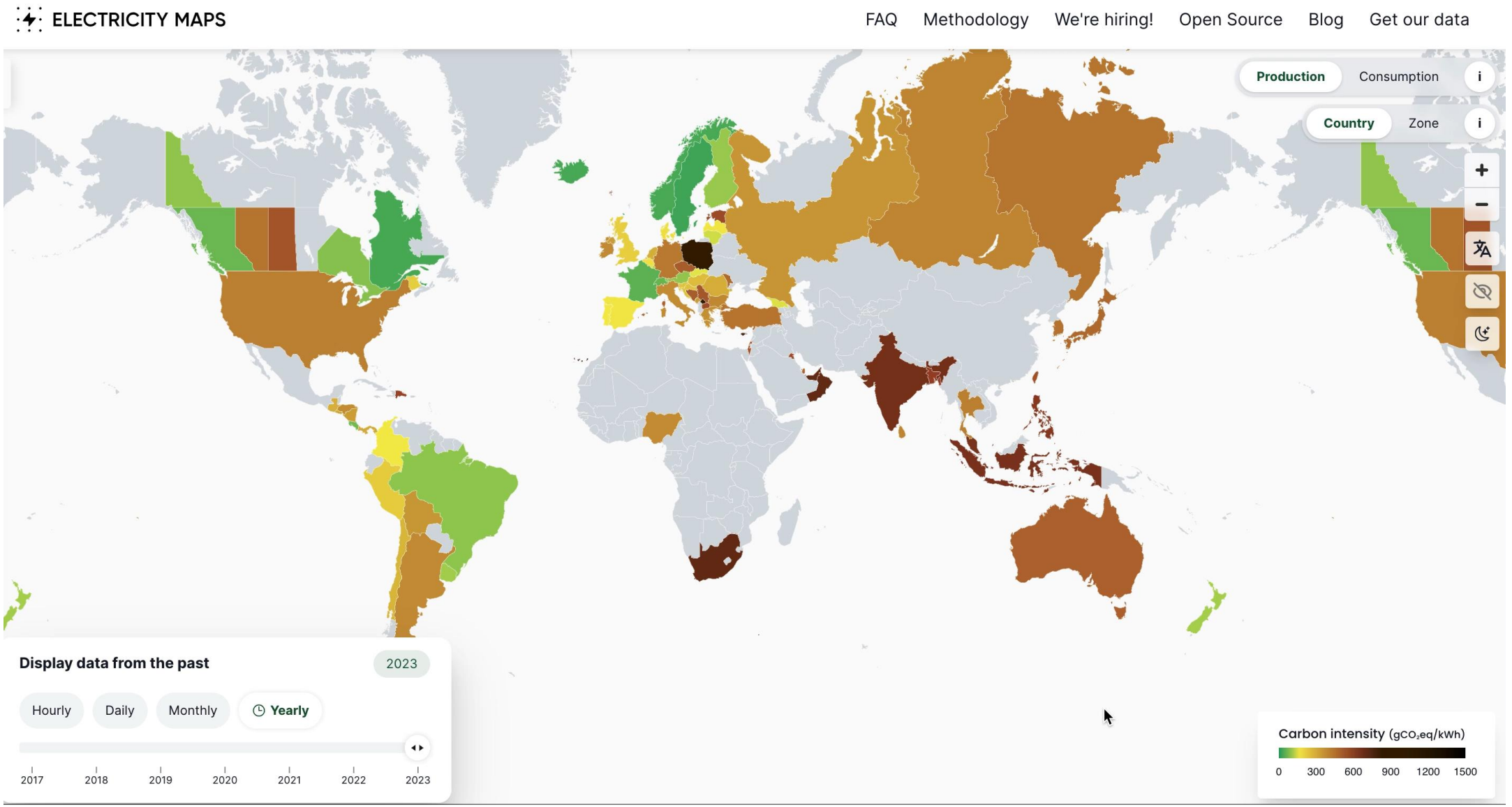
Many examples also in the form of Apps

- USGS https://earthquake.usgs.gov/earthquakes/map/?extent=-14.09396,-141.85547&extent=69.28726,-47.98828
- Volcanoes discovery
- Null school – Ventusky – Windy
- https://www.blitzortung.org/en/live_lightning_maps.php (live lightning maps)
- Electricity maps https://app.electricitymaps.com/map
- Wind generation - https://windeurope.org/about-wind/daily-wind/
- Piracy https://www.icc-ccs.org/piracy-reporting-centre/live-piracy-map
- Live traffic jams https://www.waze.com/en-GB/live-map

https://app.electricitymaps.com/map

- computed from publically available data, published by electricity grid operators, official agencies, and others.
- areas on the map are coloured by the amounts of greenhouse gases that are emitted for each unit of electricity consumed (its carbon intensity).
- The greener the colour, the more climate-friendly the electricity consumption is
- You can click on an area to see more specifics on the origins of its data.
- Change parameters to see hourly, daily, monthly, and yearly carbon intensity


app.electricitymaps.com/map
Relaunch to update
New Tab
Search
Microsoft Outlook...
Infographics: clim...
Sede electrónica d...
Geographical Asso...
St. George's Scho...
Cover request 202...
All Bookmarks
ELECTRICITY MAPS
FAQ
Methodology
We're hiring!
Open Source
Blog
Get our data
Production
Consumption
Country
Zone
Display data from the past
30 March 2024
Hourly
Daily
Monthly
Yearly
1 Mar
7 Mar
13 Mar
19 Mar
25 Mar
Carbon intensity (gCO2eq/kWh)
0
300
600
900
1200
1500


ELECTRICITY MAPS
FAQ
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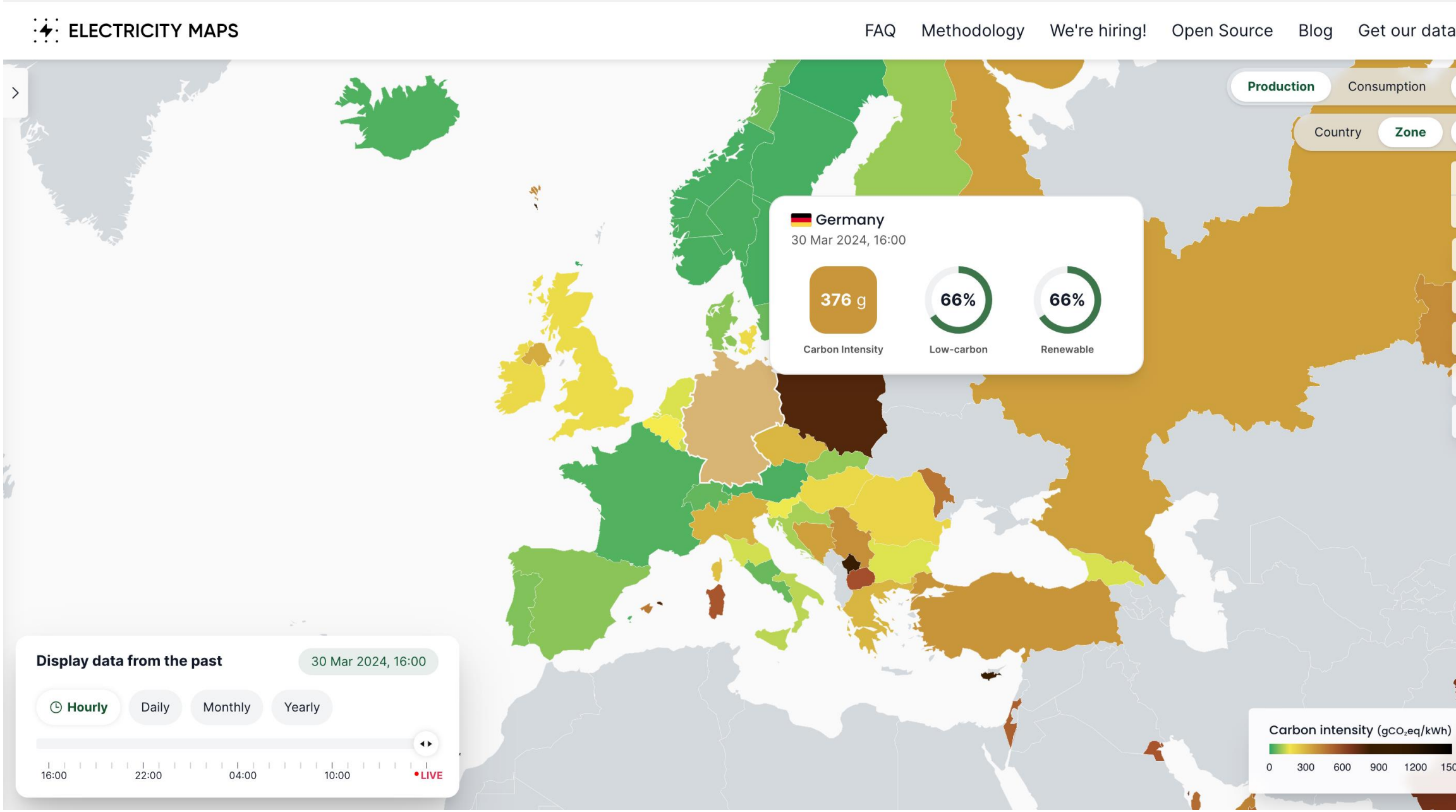
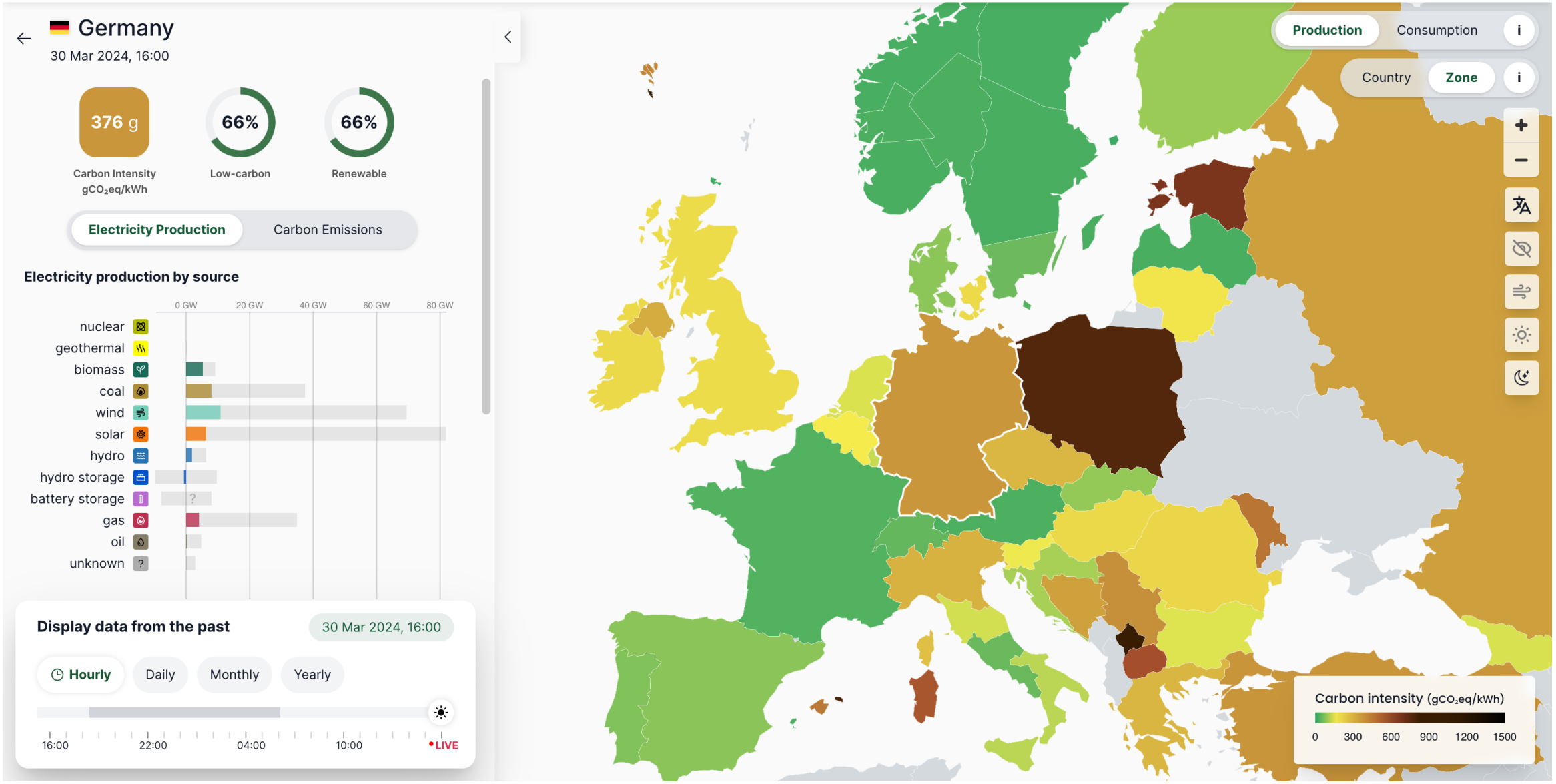
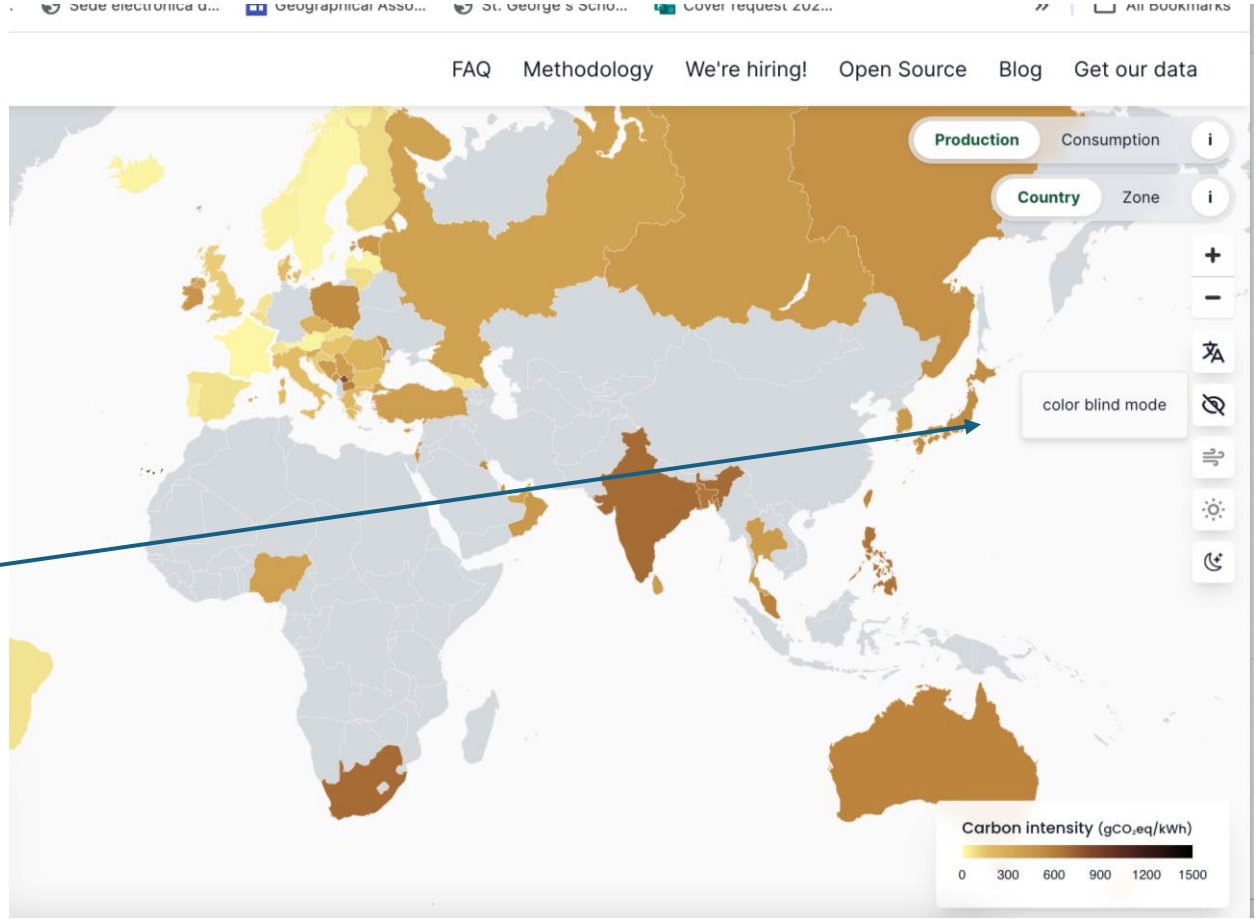
Production
Consumption
Country
Zone
Display data from the past
2023
Hourly
Daily
Monthly
Yearly
2017
2018
2019
2020
2021
2022
2023
Carbon intensity (gCO2eq/kWh)
0
300
600
900
1200
1500


ELECTRICITY MAPS
FAQ
Methodology
We're hiring!
Open Source
Blog
Get our data
Production
Consumption
Country
Zone
Germany
30 Mar 2024, 16:00
376 g
Carbon Intensity
66%
Low-carbon
66%
Renewable
Display data from the past
30 Mar 2024, 16:00
Hourly
Daily
Monthly
Yearly
16:00
22:00
04:00
10:00
LIVE
Carbon intensity (gCO₂eq/kWh)
0
300
600
900
1200


Germany
30 Mar 2024, 16:00
376 g
Carbon Intensity gCO₂eq/kWh
66%
Low-carbon
66%
Renewable
Electricity Production
Carbon Emissions
Electricity production by source
0 GW
20 GW
40 GW
60 GW
80 GW
nuclear
geothermal
biomass
coal
wind
solar
hydro
hydro storage
battery storage
gas
oil
unknown
Display data from the past
30 Mar 2024, 16:00
Hourly
Daily
Monthly
Yearly
16:00
22:00
04:00
10:00
LIVE
Production
Consumption
Country
Zone
Carbon intensity (gCO₂eq/kWh)
0
300
600
900
1200
1500

I am colour blind. How can I read the map?

You can change the colours displayed in the map by enabling the “color blind mode” setting. It is located on the bottom of the left panel on desktop and in the information tab on the mobile app.



Use

- Use electricitymaps.com to teach topics such as energy resources, distribution networks, and environmental impacts.
- Encourage students to explore real-world scenarios and propose solutions to energy challenges.
- Facilitate discussions on sustainable development, energy security, and global climate change policies.

Syllabus links – some examples

GCSE:

AQA: 3.2 Section C

OCR B: Component 2 – Resource Reliance

Edexcel A: Issue 3 - 6.2 The patterns of the distribution and consumption of natural resources varies on a global and a national scale

Edexcel B: Component 3 – Topic 9 : Consuming energy resources

Cambridge IGCSE: 3.5 Energy

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- Exploring a locality with digital maps
- Quick wins with 3D Scenes
- Using Sentinel Hub to observe eruptions in Iceland
- Queering the map
- Changing borders
- Realtime GIS
- Air Pollution and the school's travel plan
- Breathing new life into old maps

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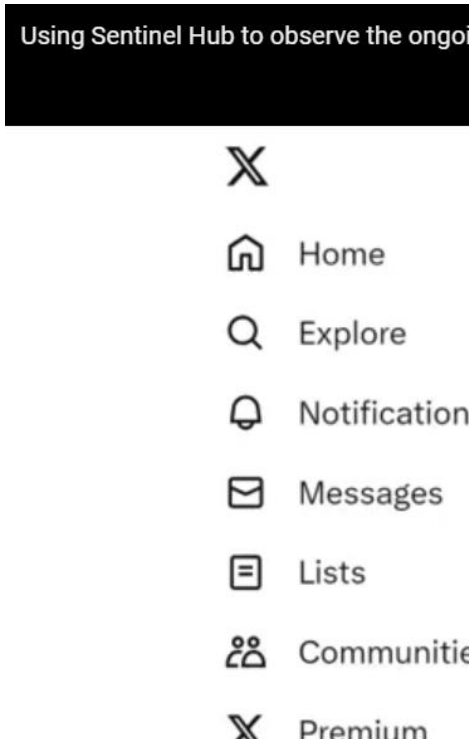
Using GIS to look at issues

Air pollution in the West Midlands

School's Active travel plan



https://wm-air.org.uk/blog/2023/08/31/introduction-to-air-pollution-resources-for-schools-ks3-4/

- WM-Air have released an air quality resource for educators, "*Introduction to Air Pollution: Resources for Schools (KS3-4)"* which is a series of lesson plans and teaching resources aimed at introducing and explaining air pollution as a social and environmental challenge to key stage 3 & 4 students (some sections adaptable for KS5). The resource can be downloaded via the form on the website above.
- This resource was designed by researchers at the WM-Air programme at the University of Birmingham (in conjunction with external subject experts and educators), with the aim of supporting teachers in raising awareness and geographical understanding around air pollution and its risks for public health. Designed with the current curriculum in mind, the programme covers knowledge around air pollution, its sources and its impacts within the context of the key skills required by secondary school geographers. Lessons include the opportunity to present and interpret air pollution data and to formulate geographical report. The document is designed as a series of lessons complete with information, tasks and exercises, but lessons and exercises also function as standalone resources as needed. An answer booklet is also provided to support marking.

UNIVERSITY OF BIRMINGHAM WM-AIR

Additional Section 4: Geographic Information System (GIS)

Additional task produced by Robert Lang (King Edwards Camp Hill Gils School) with support from Katie Hall (Esri UK), using data supplied by WM-Air (University of Birmingham).

Lesson 1: Creating an air pollution map

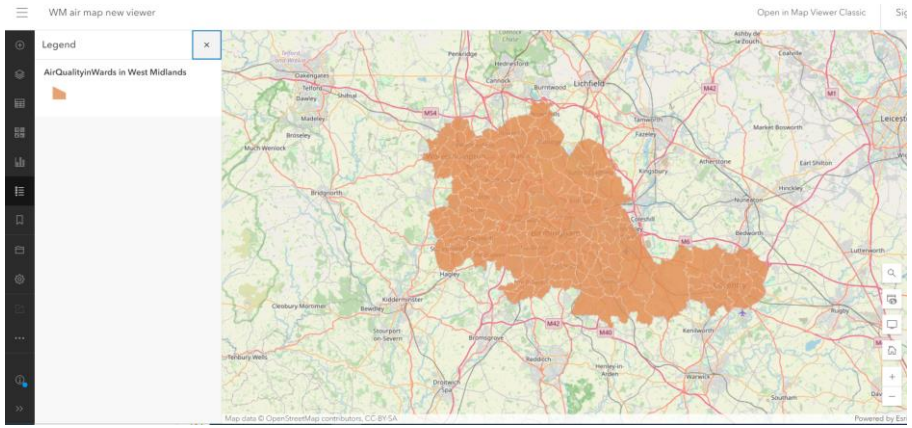
The annual mean concentration is the average amount of pollution in the air for a whole year. This is important because pollution levels can change depending on factors like weather, seasons, and location. Looking at the average pollution over a year gives a better idea of how polluted an area is.

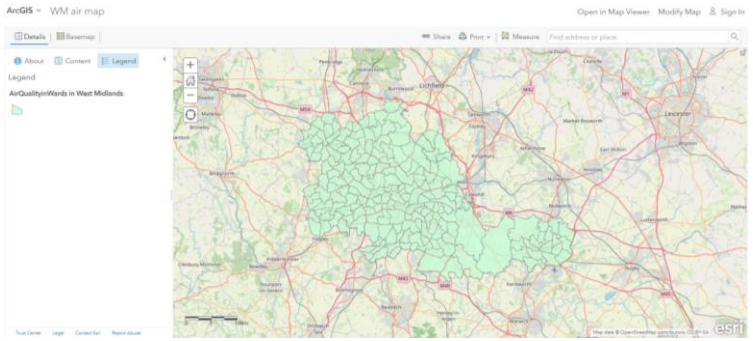
You can create a map of this data and then add additional layers to see if there are any patterns and potential reasons.

- **MAPs pre loaded with all the layers needed for the task**
- **No sign in needed**
- **Using real data**
- **Aimed to develop some GIS skills such as symbolising data and overlaying layers to see patterns**

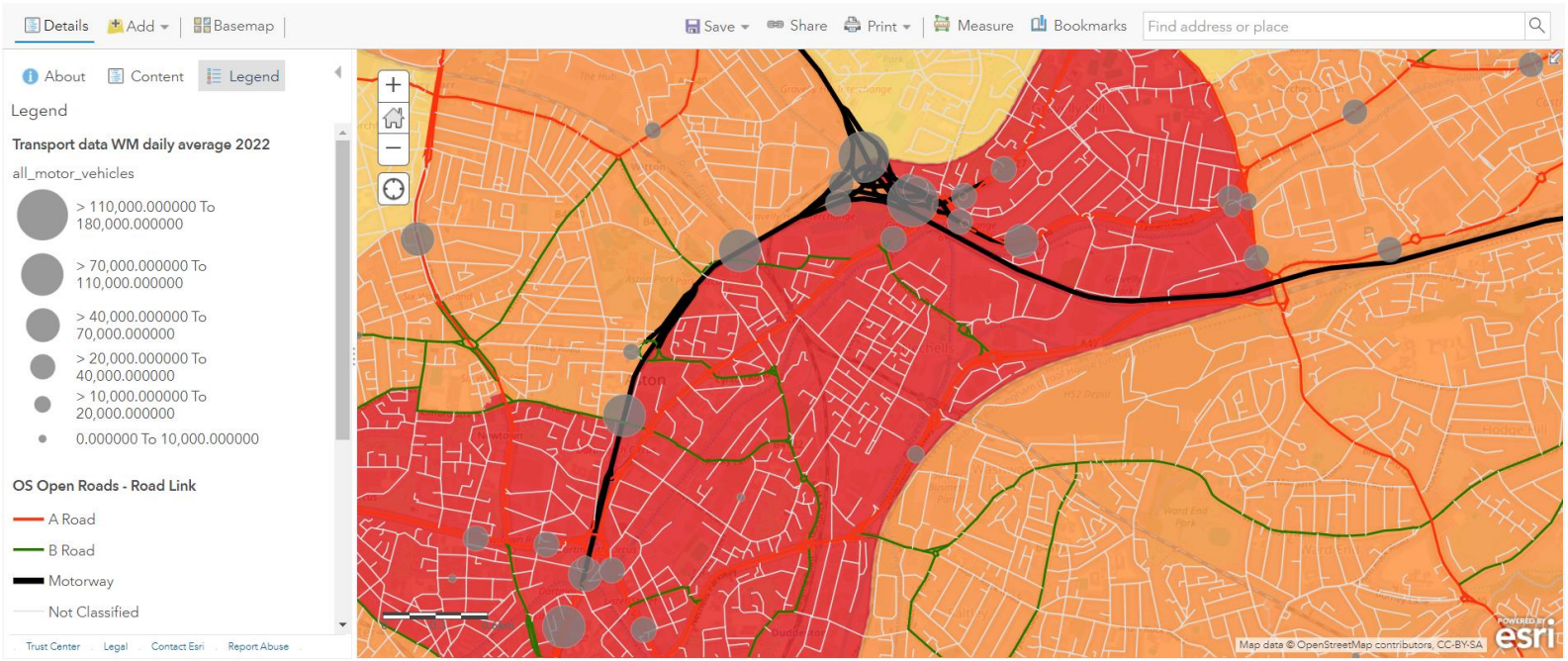
https://kechg.maps.arcgis.com/apps/mapviewer/index.html?webmap=9709fb86be5a464f8f40f966ffe4f11b

https://www.arcgis.com/home/webmap/viewer.html?webmap=6557cc965d3f4b1fb1802b9481f0c550&extent=-2.5686,52.2515,-0.9248,52.7472

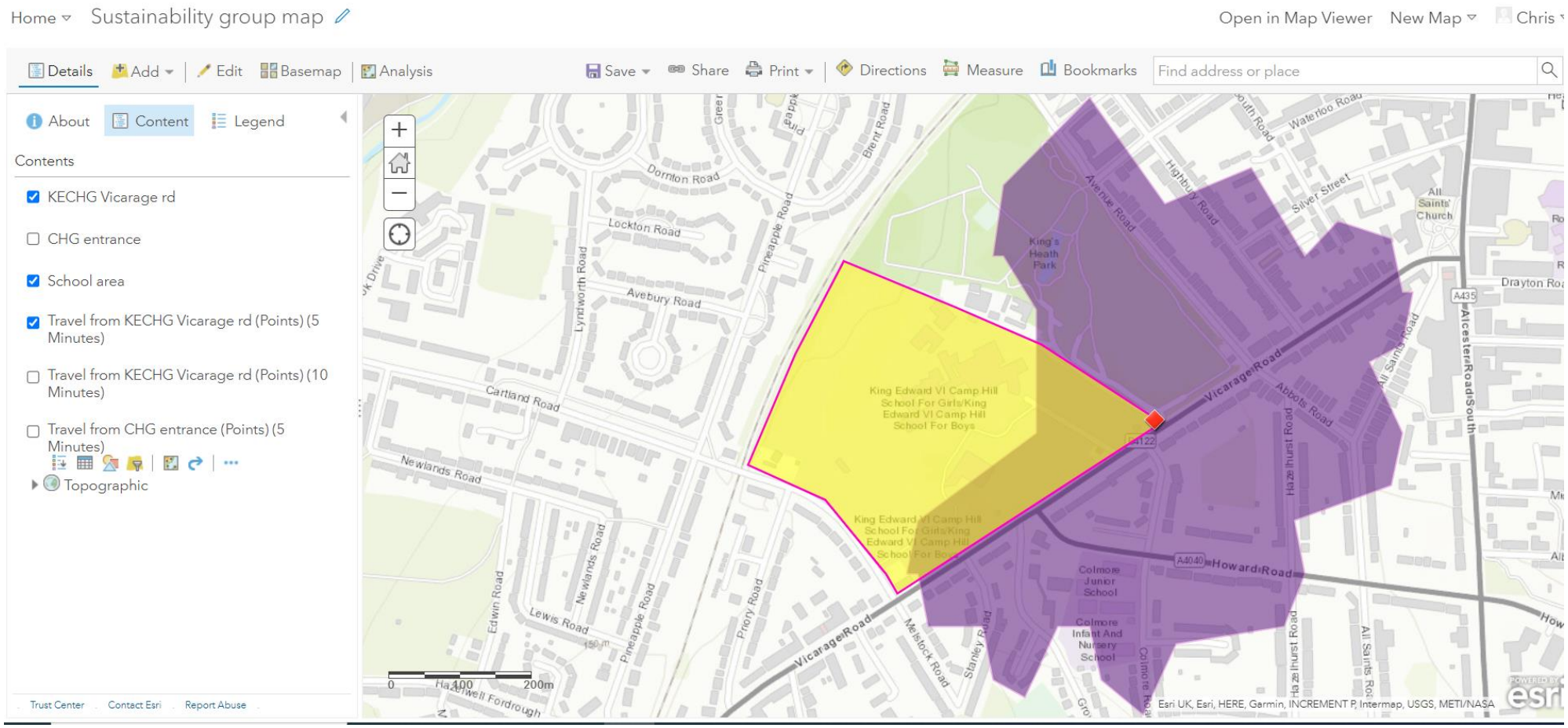




ArcGIS WM air map Open in Map Viewer New Map Sign In



Active travel plan in school



5 Minute walking form Vicarage Road KECHG entrance

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How can everyone breathe new life into old maps? GIS and disciplinary knowledge

Aims:

To demonstrate how GIS can help to develop **disciplinary knowledge** (how we know what we know) about tectonic plate boundaries.

Brendan Conway

Geography teacher (+ GIS; ITT, ECF)

@GIPedagogy Erasmus+ Project

Geographical Association ICT SIG

Tutor2U

@mildthing99

Further resources: [GIS Maps for Learning](https://storymaps.arcgis.com/stories/2ebd0ba970094e56b36f092b10e5b36b)

https://storymaps.arcgis.com/stories/2ebd0ba970094e56b36f092b10e5b36b

How can GIS help to develop disciplinary knowledge about tectonic plate boundaries?

How can everyone breathe new life into old maps? GIS and disciplinary knowledge

- **‘Media Layers’ provide an easy and quick way to make GIS ‘part of the furniture’**
  - **Georeferencing using Media Layers e.g. historical maps**
  - **Basic match can be made easily**
  - **Use more advanced tools to achieve greater accuracy**
  - **Guide video showing how to add a media layer**

Example:

- **Tectonic hazards**

'Getting our bearings: geography subject report' Ofsted 2023 Recommendations include…

- *‘Plan procedural knowledge into their curriculum in the same way as they do substantive knowledge, so that pupils make progress in their ability to use different geographical skills. In secondary schools, this should include the use of GIS.’*

How can everyone breathe new life into old maps? GIS and disciplinary knowledge

Getting our bearings: geography subject report (Ofsted Sept 2023)

‘Pupils’ combined appreciation of both substantive and **disciplinary knowledge** can be described as geographical understanding.’

‘When leaders had thought about **disciplinary knowledge**, we saw some stronger practice…This is because they were being taught the subject in a distinctly geographical way, whereby they layered different forms of geographical knowledge over time.’

‘Pupils’ combined appreciation of both substantive and **disciplinary knowledge** can be described as geographical understanding.’

‘Teachers can develop pupils’ **disciplinary knowledge** not as a separate topic but as pupils learn more about the substantive content of the geography curriculum. Disciplinary knowledge should be organised in the curriculum so that pupils learn how geographers question and explain the world. Sometimes this is described as ‘thinking like a geographer’.’

‘In schools where this was strongest, pupils were taught explicitly about how geographical knowledge is gained and how what we know has changed over time. For example, in one school pupils were regularly reminded of how developments in technology, such as the use of satellite imagery, were changing what we thought we knew about earth systems.’

How can everyone breathe new life into old maps? GIS and disciplinary knowledge

Tectonic plates:

From 'Telegraph Plateau'

to the Mid-Atlantic Ridge

Chart of the submarine Atlantic Telegraph (1858) by Barker, Wm. J. (William J.) (Surveyor)

Chart of the submarine Atlantic Telegraph (1858) by Barker, Wm. J. (William J.) (Surveyor)

Chart of the submarine Atlantic Telegraph (1858) by Barker, Wm. J. (William J.) (Surveyor)

CHART
of the
SUBMARINE ATLANTIC TELEGRAPH

Compiled from the Journal of CYRUS W. FIELD Esq.

Published by
W.J. BARKER & R.K. KUHNS
No 23 North 6th St. Philadelphia Pa.

ALPHABET
Transatlantic Submarine Telegraph

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z	&			

CYRUS W. FIELD Esq.

End view of Cable.

Side view of Atlantic Cable, with the Covering laid bare, Natural size. 1. Coating of 18 wires 7 strands each. 2 Rope yarn soaked in Tar. 3. Outta Perche 3 coats. 4. Telegraph wire 7 in number.

LABRADOR
LOWER CANADA
GULF of St LAWRENCE
NEWFOUNDLAND
NEW BRUNSWICK
MAINE
NOVA SCOTIA
Bay of Fundy
Bank of Newfoundland
ATLANTIC OCEAN
SCOTLAND
IRELAND
ENGLAND
Irish Channel
English Channel
FRANCE
BAY of BISCAY
SPAIN
PORTUGAL
MADRID
LISBON
AZORES
AFRICA
Str of Gibraltar
Madeira
PARIS
LONDON

Distance to Valencia harbour 813 naut. Miles
Cape Race to Innistrahull 1172 and to Liverpool 1970 Miles Great Circle
Cape Race to C. Clear 1611 and to Liverpool 2083 Miles (Great Circle)
Distance to Tel. Station Trinity Bay 882 naut. Miles
Dist. from New York to Paspel 1800 naut. Miles
Proposed Submarine Telegraph from Washington to Paris
Contemplated Line from Washington to Gibraltar Distance 2600 nautical Miles
Upper Line
Lower Line

Submarine Telegraph
Land Telegraph
Proposed Lines

Chart of the submarine Atlantic Telegraph (1858) by Barker, Wm. J. (William J.) (Surveyor)


Aberdeen
SCOTLAND
Frith of Forth
Edinburgh
Glasgow
Innistrahull
Newcastle
Donegal Bay
Belfast
Urris Head
IRELAND
Liverpool
Hull
York
Manchester
Styne Head
Galway
Dublin
Holyhead
Galway Bay
Shannon R.
Limerick
Irish Channel
Birmingham
To the Hague
ENGLAND
Valentia Bay
Terminus
Cork
LONDON
Bristol Channel
Ostende
Bandry Bay
Cape Clear
Landy I.
Portsmouth
Bristol
Southhampton
Brighton
Dover
Calais
Plymouth
Portland
Lands End
Lizard Pt.
English Channel
Cherbourg
Havre
PARIS

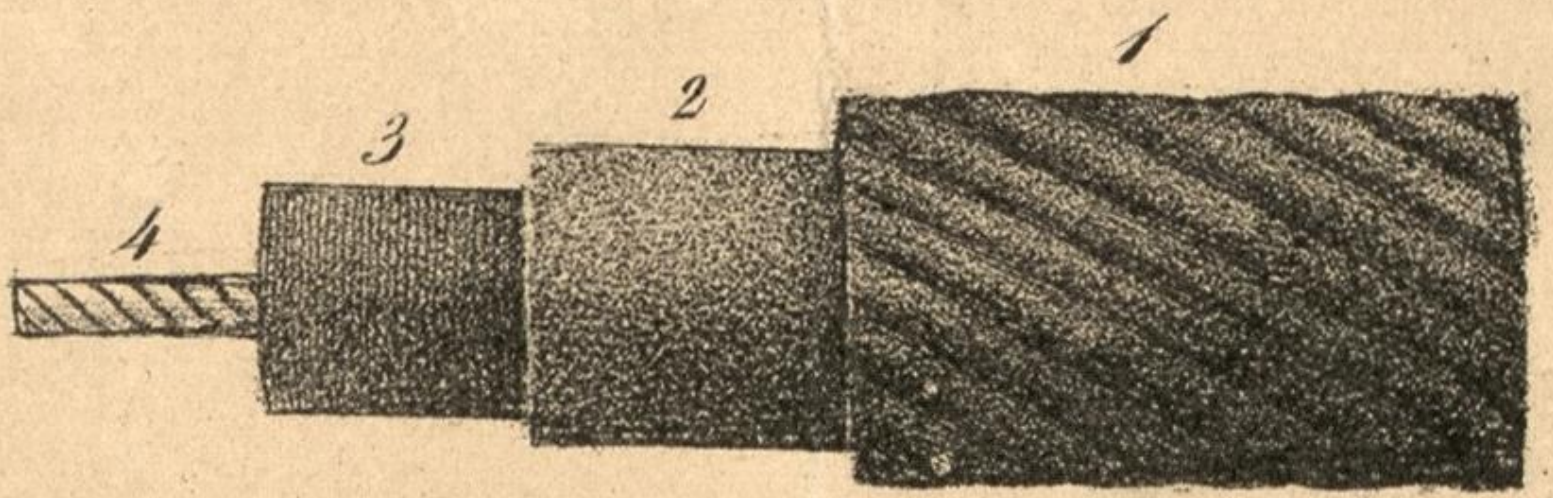
1830s: **Electric telegraph** invented

Gutta-percha is a naturally occurring thermoplastic latex derived from trees native to SE Asia and Australasia:

- A polymer which forms a rubber-like elastomer
- Crystalline structure > more rigid than latex rubber

1838: **Morse code** invented

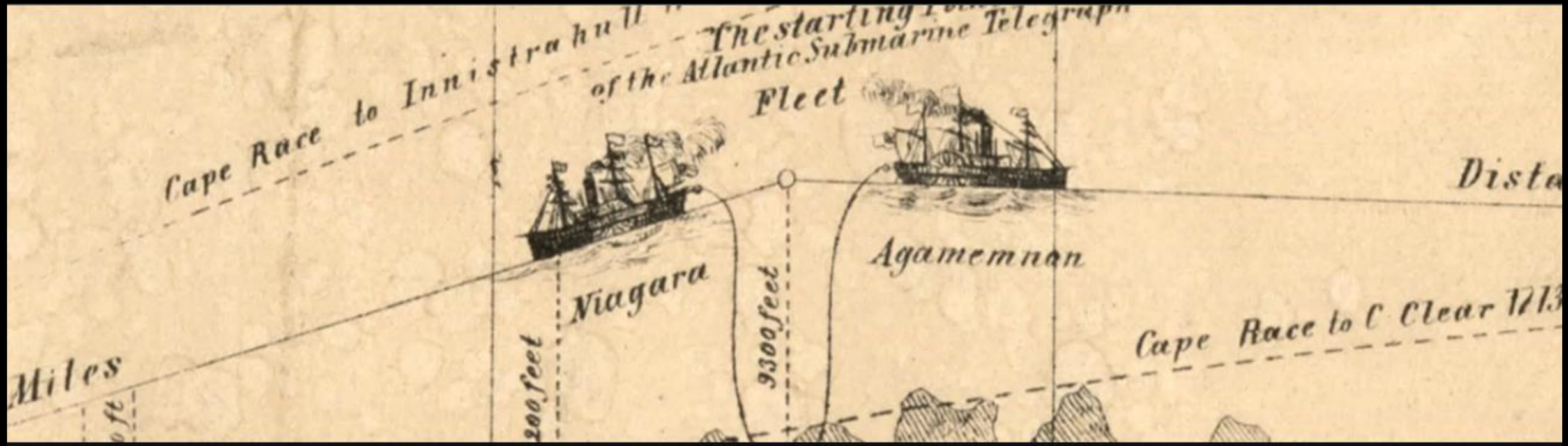
End view of Cable.



Side view of Atlantic Cable, with the Covering laid bare, Natural size. 1. Coating of 18 wires 7 strands each 2 Rope & yarn soaked in Tar. 3. Gutta Percha 3 coats. 4. Telegraph wire 7 in number.

1840s: Michael Faraday discovered the value of **gutta-percha** as an insulator.

1845: First use of **gutta-percha** to insulate telegraph wires.

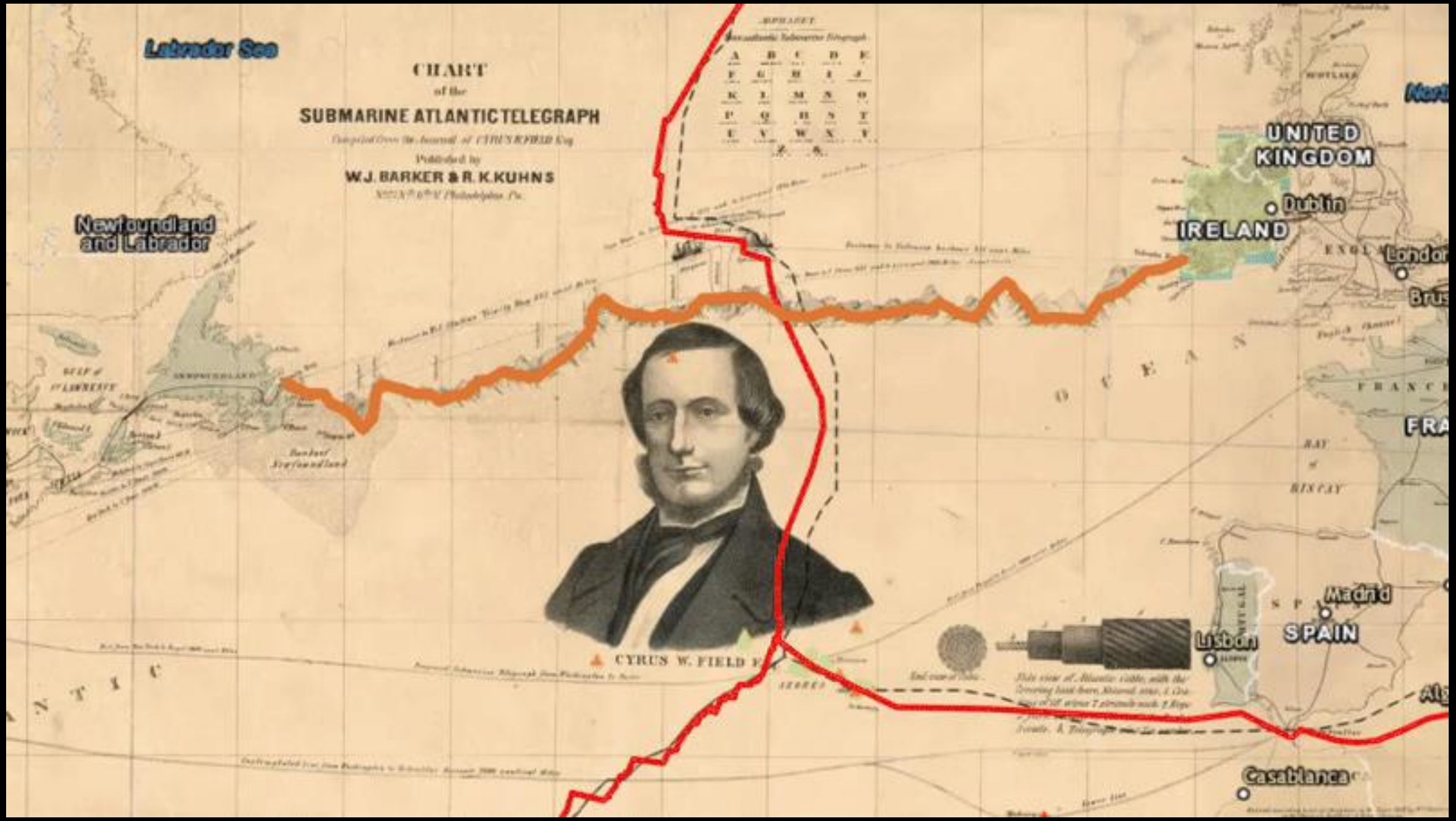


Atlantic Submarine Cable 1858

How did the pioneers of telecommunication accidentally discover the Mid-Atlantic Ridge?

A BC map

Atlantic Submarine Cable 1858 (Story Map)



Sumbarnine Atlantic Telegraph v Submarine Cable Map (TeleGeography)

How can everyone breathe new life into old maps? GIS and disciplinary knowledge

Tectonic Plates: Atlantic Submarine Cable 1858 [Summary]

- 1858 historical map georeferenced using Media Layers in ArcGIS Online
- Shows knowledge of ocean floor by mid 19th century
- Compare with up-to-date layers e.g. Imagery; Ocean floor; tectonic plate margins
- Analysis with GIS to create Elevation Profile of original cable route
- Compare 'Telegraph Plateau' with Mid-Atlantic Ridge to inform **disciplinary knowledge**
- Provide insight into ancestry of telecommunications and Internet geography
- Compare with current cable routes and legacy e.g. heritage tourism in Valencia, Kerry
- Atlantic Submarine Cable 1858 (Story Map)

How can everyone breathe new life into old maps? Links

Further examples

- **Media Layers collection by @mildthing99**

Guides

- Add media layers (Esri Guide)
- Announcing Media Layers for adding images to web maps (Guide by Mark Harrower of Esri)

Useful sources of historical maps

- The National Archives @UkNatArchives
- National Library of Wales maps @NLWales
- National Library of Scotland Maps @natlibscot
- Public Record Office of Northern Ireland (PRONI), official archive for Northern Ireland @PRONI_DFC
- Teesside Archives @TeessideArchive
- North Yorkshire County Record Office online catalogue @nyccarchives
- Essex Record Office @essexarchive
- Kent Archives @kent_archives
- Chester Beatty art museum, Dublin Castle @CBL_Dublin
- Library of Congress maps @LOCMaps

Fieldwork links

- Investigating change in Local High Street (FSC) KS2; Secondary Data for CBD (FSC) @FieldStudiesC

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ECT Lecture 2

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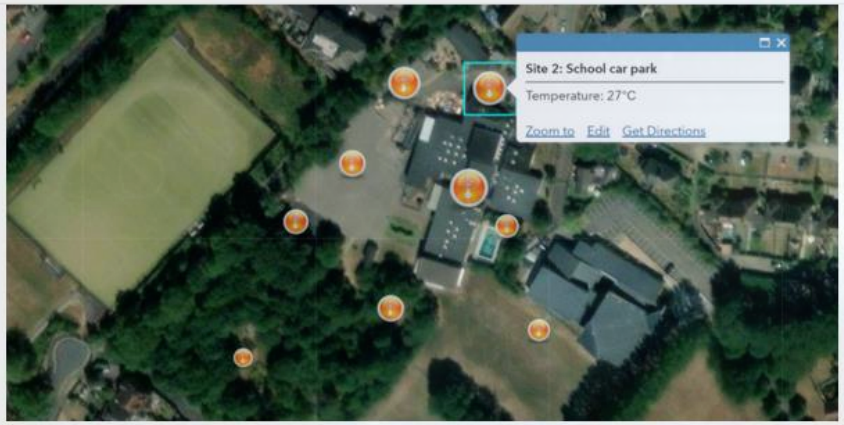
How mapping and the use of GIS enrich geographical thought and action



24th January 2024

Read time: 5mins

"learners… need to use maps, GIS and atlases to identify, plot and represent features, and to examine spatial decision-making by people (including themselves and their families) and organisations."

RAWLING, 2022

Mapping and the use of GIS in the 'Getting Our Bearings' Ofsted report

FRI 5th April 2024 #GACONF24

Geographical Association

GA ICTSIG

KS3–P16
Presented by the GA ICTSIG
Room 4.204

'7 GIS Ideas'

for everyone to use in the geography classroom

?

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ECT Lecture 2

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@gasigict

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FRI 5th April 2024 #GACONF24